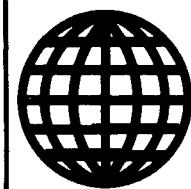


28 May 1993



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JPRS-TEN-93-014

CONTENTS

28 May 1993

INTERNATIONAL

Gorbachev Asks Brundtland To Join Green Cross	<i>[Oslo AFTENPOSTEN 20 Apr]</i>	1
Funds, Expertise for Russian Nuclear Waste Depots	<i>[Oslo AFTENPOSTEN 21 Apr]</i>	1
German Social Democrats Oppose Norway's Whaling	<i>[Oslo AFTENPOSTEN 22 Apr]</i>	2
Project With Russia To Determine Nuclear Waste Threat	<i>[Oslo AFTENPOSTEN 22 Apr]</i>	3
Komsomolets' Builder Warns of Plutonium Leakage	<i>[Oslo AFTENPOSTEN 24 Apr]</i>	3
Brundtland Applauds Clinton's Environment Policy	<i>[Oslo AFTENPOSTEN 24 Apr]</i>	4
Iran's Ruhani Urges Completion of Nuclear Reactor	<i>[DPA 28 Apr]</i>	4

AFRICA

KENYA

EC Grants 216 Million Shillings for Wildlife Programs	
<i>[Kenya Broadcasting Corporation 29 Apr]</i>	6

ZAMBIA

Environment Still Heavily Polluted	<i>[SUNDAY TIMES OF ZAMBIA 28 Feb]</i>	6
------------------------------------	--	---

CHINA

Protection of Ecology in Upper Reaches of Yangtze River Urged	<i>[YUNNAN RIBAO 4 Feb 93]</i>	7
State Plan on Gradually Eliminating Ozone-Depleting Substances Ratified		
<i>ZHONGGUO HUANJING BAO 9 Feb]</i>		7
Resolution on Strengthening Execution of Environmental Law Passed		
<i>[ZHONGGUO HUANJING BAO 9 Feb]</i>		7
China's Tactics in Environmental Diplomacy	<i>[ZHONGGUO HUANJING BAO 13 Feb]</i>	8
Ecological, Environmental Monitoring in Three Gorges Begins		
<i>[ZHONGGUO HUANJING BAO 23 Feb]</i>		11
State Environment Monitoring Network Officially Established	<i>[SHANXI RIBAO 25 Feb]</i>	11
Resettlement in Three Gorges Area Officially Gets Under Way	<i>[WEN HUI BAO 8 Mar]</i>	12
Polluters Will Be Prosecuted	<i>[CHINA DAILY 8 Apr]</i>	12
Nuclear Power Plant Monitoring System Operating Normally	<i>[XINHUA 16 Apr]</i>	12
Foreign Funds To Be Used for Curbing Chronic Soil Erosion	<i>[CHINA DAILY 10 Apr]</i>	13
Water Woes Still Grip Capital, 49 Other Cities	<i>[CHINA DAILY 21 Apr]</i>	14
Environment Bond Signed in Montreal	<i>[CHINA DAILY 19 Apr]</i>	14
Power Fees To Help Pay for Dam	<i>[CHINA DAILY 19 Apr]</i>	15
UNDP To Help Phase Out Ozone-Depleting Substance Production	<i>[XINHUA 24 Apr]</i>	15

EAST ASIA

JAPAN

Plan To Put 5 More Wetlands Under Ramsar Convention Approved	<i>[KYODO 16 Apr]</i>	17
Tokyo Asks IAEA for Help on Russian Nuclear Waste	<i>[KYODO 16 Apr]</i>	17

THAILAND

Lead, Mercury Levels Concern Experts	<i>[MATICHON 14 Apr]</i>	17
--------------------------------------	--------------------------	----

EAST EUROPE

REGIONAL AFFAIRS

Safety of Nuclear Power Stations Assessed [Paris LE MONDE 21 Apr]	19
Slovakia, Poland Sign Environmental Cooperation Agreement	
[Bratislava Rozhlasova Stanica Slovensko Network 16 Apr]	21

CZECH REPUBLIC

Environment, Crime Viewed as Most Pressing Problems [CTK 16 Apr]	22
--	----

LATIN AMERICA

PARAGUAY

Rodriguez: Solution to Pilcomayo Issue To Be Found 'Soon' [NOTICIAS 16 Apr]	23
Di Tella: Argentina Won't Close Pilcomayo River Diversion [ULTIMA HORA 16 Apr]	23

NEAR EAST/SOUTH ASIA

ALGERIA

Concern Over Lack of Environmental Policy [EL WATAN 8 Apr]	25
--	----

INDIA

World Record in Afforestation Achieved [PATRIOT 1 Apr]	25
Committee Appointed To Study Nuclear Plant Fire [DECCAN CHRONICLE 6 Apr]	26
Apathy Blamed for Darjeeling's Environmental Destruction [THE STATESMAN 26 Apr]	26

ISRAEL

Fish Ponds Being Exploited by Predatory Pelicans [HA'ARETZ 31 Mar]	27
Sarid Rejects Egyptian Concern About Radioactive Waste [Qol Yisra'el 16 Apr]	29
Need To Open Dimona Reactor After Leakage [HA'ARETZ 16 Apr]	29
Beersheba Response to Environmental Demands [HA'ARETZ 20 Apr]	31

CENTRAL EURASIA

REGIONAL AFFAIRS

Russia Seeks To Ensure Nuclear Safety in Former USSR [KOMMERSANT-DAILY 23 Apr]	33
--	----

RUSSIA

Murmansk Oblast Approves Creation of Local Ecology Funds [POLYARNAYA ZVEZDA 17 Mar]	35
Local Officials Assess Chelyabinsk Oblast Ecology	35
'Mayak' Plant Remains Focus of Concern [CHELYABINSKIY RABOCHIY 18 Mar]	35
Rehabilitation Expenditures Detailed [CHELYABINSKIY RABOCHIY 25 Mar]	37
Tomsk-7: Ministries 'Console' Public [FEDERATSIYA Apr]	38
Finnish Firms' Plan For Petsamo Nickel Plant Cleanup [HELSINGIN SANOMAT 4 Apr]	39
Finnish Agency Aiding Karelian Plant Construction [Helsinki HELSINGIN SANOMAT 7 Apr]	40
Expert on Pollution Problems Says Health Endangered [KURANTY 7 Apr]	41
Underground Nuclear Power Stations Proposed for St. Petersburg	43
Advocate Foresees Enhanced Safety [CHAS PIK 7 Apr]	43
Retired Admiral Questions Plan [CHAS PIK No 13, 7 Apr]	45
Calls for Contamination Checks of Cargo Leaving Tomsk Area [Moscow TV 16 Apr]	46
Tomsk-7: More on Yeltsin Nuclear Safety Directive [ROSSIYSKAYA GAZETA 16 Apr]	46
Tomsk-7: IAEA Authorities Give Tomsk-7 Accident Site All Clear [ITAR-TASS 16 Apr]	47

Draft Law on Handling of Radioactive Waste Adopted [ITAR-TASS 16 Apr]	47
Government Approves Program for Urals Radioactive Victims [Moscow TV 16 Apr]	47
Dep Premier on Nuclear Waste Disposal, Army Undermanning [KRASNAYA ZVEZDA 16 Apr]	48
Greenpeace Reveals Localized Spots of Higher Radiation [Moscow TV 15 Apr]	48
'Secret' CPSU Documents Cast New Doubt on Reactor Safety [IZVESTIYA 17 Apr]	48
Tomsk-7: Graphic Portrays Distribution of Radiation [ROSSIYSKAYA GAZETA 20 Apr]	54
Foreign Ministry Distributes Yablokov Commission Report Abroad [IZVESTIYA 20 Apr]	56
Balakovo AES Tests Fourth Reactor Despite Local Objections [SEGODNYA 20 Apr]	58
Krasnoyarsk Kray to Boost Fines Against Polluters [IZVESTIYA 21 Apr]	59
Falling Birthrate Not Caused by Economic Hard Times [IZVESTIYA 22 Apr]	59
Tomsk-7: Further on Minatom News Conference [DELOVOY MIR 22 Apr]	60
Yablokov on Political Impediments to Nature Protection [KULTURA 24 Apr]	61

WESTERN REGION

Ukraine: Minister Reviews Status of Chernobyl Zone [ROSSIYSKAYA GAZETA 20 Apr]	63
Ukraine: Private Firms Contracting To Import German Chemical Waste [MOLOD UKRAYINY 23 Apr]	64

CAUCASUS/CENTRAL ASIA

Armenia: State Minister Details Steps in Armenian AES Renovation [VEK 23 Apr-2 May]	67
Azerbaijan: Ecological Agreement Signed with Turkey [BAKINSKIY RABOCHIY 6 Mar]	67
Azerbaijan: President Urges Initiative To Protect Caspian [BAKINSKIY RABOCHIY 6 Mar]	68
Azerbaijan: Sumgait Mortality Rates, Caspian Pollution at Record Levels [ROSSIYSKAYA GAZETA 8 Apr]	68

BALTIC STATES

Soviet Occupation's Impact on Environment Viewed [Bonn DIE WELT 16 Apr]	68
Lithuania: German Environment Minister Visits Ignalina, Discusses Safety Aid [Hamburg DPA 16 Apr]	69
Latvia: New Law on Toxic Waste Takes Effect 28 Apr [BNS 27 Apr]	69

WEST EUROPE

REGIONAL AFFAIRS

Nuclear Storage Ship Moves Close to Norway Coast [Kirkenes SOR-VARANGER AVIS 4 Mar]	70
EC Contributes to East European Nuclear Safety [Paris AFP SCIENCES 11 Mar]	71

FINLAND

Study: Harmful Discharges Into Environment Reduced [HELSINGIN SANOMAT 29 Mar]	71
Minister Comments on Nordic Environment Study [HELSINGIN SANOMAT 2 Apr]	72
Finns Seen Especially Vulnerable To Thinning Ozone Layer [HELSINGIN SANOMAT 6 Apr]	73
Highway Agency Test To Reduce Salt Use Seen Success [HELSINGIN SANOMAT 6 Apr]	74
Groundwater Pollution Traced Mainly to Farming [HELSINGIN SANOMAT 10 Apr]	74
Agency Studies Fertilizers' Effect on Waters [HELSINGIN SANOMAT 30 Apr]	75

NORWAY

Ecological Milk Within Two Years [AFTENPOSTEN 17 Apr]	75
Association Derides Government CO ₂ Policy [AFTENPOSTEN 23 Apr]	76

Gorbachev Asks Brundtland To Join Green Cross
93EN0423Z Oslo AFTENPOSTEN in Norwegian
20 Apr 93 p 6

[Article including conversation with International Green Cross President Mikhail Gorbachev by Gunnar Filseth in Tokyo, date not given: "The Wooing of the Green"—first paragraph is AFTENPOSTEN introduction]

[Text] Gro Harlem Brundtland as vice president of the International Green Cross? Mikhail Gorbachev has hopes.

"I hope she will become our vice president. We need her personality in the organization...."

Gorbachev, president of the newly founded International Green Cross, gesticulated energetically. It is Brundtland he is talking about and he is not sparing in his words of praise.

"She has much experience, she comprehends these problems. I very much want such a person," he said.

Too Busy

Gorbachev's letter, however, did not bring the desired result. The prime minister is said to have responded that she was too busy with Norwegian politics. But Gorbachev, currently launching Green Cross as the environmental movement's counterpart of the Red Cross, does not yield so easily:

"Yes, I know that she has much to do. But just now, it does not need to take up so much time. If she does not have time for a meeting, she can send a representative. She has many advisers...."

The question was brought up when Gorbachev took a stroll outside the conference hall in Kyoto together with Thor Heyerdahl and a woman senator from the Philippines. The Green Cross leader argued:

"Even though Brundtland does not have so much time for activities, she will nevertheless strengthen the organization. She can lend moral support as well as technical expertise," said Gorbachev, and talked about the Brundtland commission's report: "The most influential document there is on these matters."

Convincing?

"I will send her all of the documents from Kyoto. I am sure that she will find them interesting and that she will come aboard. She is an old friend of mine, so I think that we will agree. Furthermore it will be good to have a woman vice president."

"I will talk to her personally," Heyerdahl interjected. He claimed that he had already been asked to press suit on behalf of Gorbachev, even before AFTENPOSTEN raised the question.

Gorbachev also had many words of praise for Heyerdahl. As to why he had chosen a Norwegian he never before had met as a board member, his spontaneous reaction was:

Old Acquaintance

"But I know him, of course! I have known him a very long time. Through his books, to be exact. Yes, Mr. Heyerdahl is one of the world's best-known men."

And now, after a more personal acquaintance?

"Thor Heyerdahl is Thor Heyerdahl. It is that simple. He is exactly how I had imagined him from his books," Brundtland says.

The mood is jovial. Cherry blossom petals, adrift in the spring breeze, settle upon the Green Cross president's bald pate.

President Gro?

"Indeed, she could even become president of this organization at some point," said Gorbachev, as though making a new attempt to convince the vacillating prime minister.

Was this an indication that he is thinking of a new political career? Or was he using a suitable fall-back post as an enticement in the event the political winds were to go against the Norwegian head of government? Gorbachev, however, refused to make further comment, directing his steps toward the conference hall and the next board meeting.

Would he not rather be in Moscow now, just before the national referendum?

A short answer in which the old enmity with Boris Yeltsin shines through:

"I cannot waste my time on that."

Funds, Expertise for Russian Nuclear Waste Depots

93EN0428Z Oslo AFTENPOSTEN in Norwegian
21 Apr 93 p 3

[Article by Jan Gunnar Furuly: "Norway Offers Funding for Russian Nuclear Waste Disposal"—introductory paragraph in boldface as published]

[Text] Russian nuclear waste depots on the Kola peninsula and Novaya Zemlya may be partially financed by Norwegian authorities.

The Foreign Ministry, the Environmental Affairs Ministry, and the National Radiation Protection Agency have a positive attitude toward cooperating with the Russians on the underground storage depots that will house high- and medium-level radioactive waste.

Experts characterize the need to eliminate the danger of radiation and leaks in northern Russia as acute. Among

other things they point out that the storage capacity of present Russian nuclear waste depots has long been exceeded.

"We consider it extremely important to contribute to solving this environmental problem which affects such vital interests in both Russia and Norway," said consultant Magne Roed of the Environmental Affairs Ministry. Director Ole Harbitz of the National Radiation Protection Agency also stressed the need for finding permanent solutions to Russia's enormous nuclear waste problems.

Waiting for Agreements

"However, it is crucial for us to know that we are negotiating with the proper authorities in this area before Norway goes ahead at full steam. Previous experiences with the division of labor between civilian and military authorities in Russia have shown that the lines of responsibility are extremely complicated," said Harbitz.

No concrete agreements have been reached at present, but the Foreign Ministry has made it clear that it wants to make funds available via budget sums earmarked for initiatives in East Europe, AFTENPOSTEN has learned.

It is also important to make Norwegian expertise in this area available, including experience from the secure disposal of radioactive waste at the Sellafield facility in Great Britain and at Stripa in Sweden.

Informal talks on cooperation among Russia, Norway, and other western nations in establishing storage depots have been going on for some time. The project will be studied on the initiative of county authorities in Murmansk and central authorities in Moscow. The German firm NUKEM has already taken on the job of surveying the need for waste depots.

Kola Meetings

Technical adviser Nick Barton of the Norwegian Geological Institute (NGI) is visiting the Kola peninsula this week to meet with the leaders of the Kola Mining Institute and top experts in the field from Moscow. According to Barton the goal of the Kola talks is to set up a joint program for the development and planning of underground nuclear waste depots.

"The Russians' biggest problem is that all the storage sites they have are overfilled. At the same time the production of new waste is increasing, partly as a result of the large-scale replacement of fuel in the nuclear-powered civilian and military fleets," said Harbitz.

They have long resorted to alternative solutions. Among other things two discarded supply ships now serve as storage sites for the insidious waste. Norwegian experts have inspected the ships which, incredible as it seems, are located in the middle of Murmansk harbor—in close proximity to a city of over 500,000 inhabitants.

"Our inspections shows that the actual storage is up to standard, but obviously such ocean areas are highly undesirable places for radioactive waste. Underground depots have an entirely different safety level," Harbitz said.

German Social Democrats Oppose Norway's Whaling

93EN0438V Oslo AFTENPOSTEN in Norwegian
22 Apr 93 p 10

[Article by AFTENPOSTEN correspondent Halvor Heggen: "German Social Democrats Strongly Oppose Norwegian Whaling"—introductory paragraph in boldface as published]

[Text] If Norway hunts whales the country should not be allowed to join the EC, in the view of German Social Democrats.

Foreign Ministry Under Secretary Helga Hernes talked to a number of politicians in Bonn yesterday in the hope of averting what may still happen: a vote in the German Bundestag condemning Norwegian minke whaling.

"I have tried to present Norway's views. It is especially important that we are not hunting an endangered species. The opponents of minke whaling use arguments that seem to be based on misconceptions," Under Secretary Hernes told AFTENPOSTEN.

The Norwegian Government party's opposite number in Germany, the Social Democratic Party (SPD), has presented a proposal that does not bode well for Norway's cause. The party is calling on the government to oppose both scientific and commercial whaling.

Species Jeopardized

"It is to be feared that Norway as well as Japan and Iceland will resume whaling after the international whaling commission meeting in Kyoto in May. If these countries carry out their plans the future of the last big marine mammals will be jeopardized," a news release from Bundestag member Dietmar Schutz states. He is the Social Democratic spokesman on whale issues.

The Bundestag will not approve any form of penalty against countries that hunt whales. This merely involves an expression of opinion on the part of the elected representatives. But the Bundestag's viewpoint could be important in the future with regard to Norway's membership negotiations with the EC, among other things. The SPD proposal, which is currently backed by a united Bundestag group, also states: "Compliance with the whaling ban should be a basic condition for all countries applying for EC membership."

Counterproposal

The Norwegian authorities are more pleased with the whale report issued by the nonsocialist government parties in Bonn. The German Government can accept minke whaling for scientific purposes. It also stresses the

requirements of "sustainable ocean development." This is the same concept the Norwegians use to *justify* minke whaling.

The minke whale is only one of a total of 76 whale species. There are 86,700 minke whales in the northeast Atlantic and 750,000 in the Southern Hemisphere, according to the whaling commission's scientific committee.

Representatives of the German Government parties could still end up on the SPD's side in the whale debate, which is on the agenda today. However no substantive debate is anticipated at this time. The issue will be sent to both the Fishing and Environmental Committees for discussion. The parties could reconcile their views there before the decisive plenary discussion.

Letter of Protest

A good 60 percent of the German people solidly oppose whaling and Norway's diplomatic missions have received tens of thousands of preprinted letters of protest. It will be extremely difficult for the Norwegian authorities to change public opinion in this country.

Some help has come from the ZDF broadcasting company which recently aired a long documentary report from whaling communities in Lofoten. Norwegian views were given very thorough coverage.

Project With Russia To Determine Nuclear Waste Threat

93EN0438Y Oslo AFTENPOSTEN in Norwegian
22 Apr 93 p 4

[Article by Ole Johan Nilsen: "Nuclear Waste Survey"]

[Text] Norwegian authorities expect to have an adequate idea of the threat posed by dumped Russian nuclear waste within a year.

This overview will be based on work that has already been done as well as the results of a planned expedition that Norwegian and Russian experts will organize this summer. During the Storting interpellation period yesterday Research Minister Gudmund Hernes said on behalf of the environmental affairs minister that he expects the program for such a scientific expedition to be approved. An observer from the International Atomic Energy Agency will also come along on the expedition.

In a reply to a question from Kjell Magne Bondevik (Christian People's Party), Hernes said that the examination will include inspection with underwater cameras and the collection of samples to detect leaks from seven reactors with spent fuel that have been dumped. The areas concerned are east of Novaya Zemlya and in the Kara Sea.

The cabinet minister also referred to a white book, prepared by the Russians, which tells exactly where the waste was dumped and how it was packed and provides information about six accidents at plants on land

between 1959 and 1989 that led to waste being discharged into the ocean. Two of these accidents occurred on the Kola peninsula.

"What remains is finding out whether the discharged waste represents any threat to people and the environment and if so how much, as well as determining what protective measures should be taken if necessary," the cabinet minister said.

Komsomolets' Builder Warns of Plutonium Leakage

93EN0438X Oslo AFTENPOSTEN in Norwegian
24 Apr 93 p A 4

[Article by Ole Mathismoen: "Leakage From Submarine Within Three Years Predicted"—first paragraph is AFTENPOSTEN introduction]

[Text] The man who built the wrecked nuclear submarine Komsomolets says plutonium will leak out within two or three years.

The latest warning came from Moscow a few weeks ago. Aleksei Yablokov, President Boris Yeltsin's environment adviser, said it was urgent to do something about the submarine that is lying in the Norwegian Sea at a depth of 1,640 meters. He pointed out that the combination of titanium and aluminum in the torpedo design means that corrosion occurs thousands of times faster than normal. He has told the American media that in the future Russia could cause other fishing nations annual losses of \$2 billion as a result of plutonium leakage from the submarine.

The Norwegian authorities still feel it is best to leave the submarine where it is and that radioactive emissions will be harmless if they ever reach ocean areas that contain important biological products. But Norway is not opposed to covering the ocean floor.

Norwegian authorities are still skeptical about the Komsomolets Foundation—the foundation with Dutch and Russian diplomats, researchers and military people, plus Bellona's Frederic Hauge.

But regardless of what Norway thinks, the process of doing something about the submarine seems to have come a long way. In July an expedition will go to the submarine to make a final inspection. A news release from the foundation says that by July 1994 the Komsomolets problem will be solved, if the summer expedition finds it necessary. This could involve raising parts of the submarine or providing safeguards where it lies.

The powerful president of the Rubin Company, Igor Spassky, who has built all Russia's nuclear submarines, described in detail what is happening on the ocean floor. The fact that the torpedo tubes are made of titanium while the body of the torpedo is made of aluminum of the dural type and that the metals are in direct contact with salt water means that corrosion is occurring at such a rate that the plutonium will leak out in two or three

years. There are at least six kilograms of plutonium in the two torpedoes and the single reactor.

When the submarine sank there was an explosion that ripped a big hole in the hull, which means there is a constant flow of water around the torpedoes. The Russian authorities fear plutonium poisoning in an area measuring 400-500 square meters.

Brundtland Applauds Clinton's Environment Policy

*93EN0438W Oslo AFTENPOSTEN in Norwegian
24 Apr 93 p A 3*

[Article by Sveinung Berg Bentzrod: "Brundtland Praises Clinton"]

[Text] Norwegians are enthusiastic about Bill Clinton's major changes in environment policy. The fact that President Clinton will now sign the so-called bioconvention from the Rio conference and is ready to reverse several of George Bush's positions on the environment means that the United States is returning to global environmental cooperation, Prime Minister Gro Harlem Brundtland told AFTENPOSTEN.

"We need U.S. leadership on the issues that are decisive for the environment and development of the planet. President Clinton has underlined the shift in the United States' global environmental commitment that he promised in the election campaign and that we Norwegians have strongly supported in our political contacts with the White House through Vice President Al Gore."

Norwegians had looked forward to the speech Clinton gave in Washington on Wednesday in which he pledged support for the bioconvention, an effort to stabilize U.S. emissions of greenhouse gases at the 1990 level by the year 2000 and a large-scale emphasis on recycled materials as well as cars powered by natural gas.

In the UN expert panel that comes under the UN environment division, UNEP [United Nations Environment Program], the U.S. representatives have been signaling a new policy from the administration in Washington for some time, according to Environmental Affairs Ministry special adviser Peter Johan Schei.

Schei was Norway's chief negotiator when the agreement on the preservation of natural diversity, the so-called bioconvention, was hammered out prior to the conference in Rio last summer.

The agreement, along with the so-called climate convention, was central during the conference and is aimed at safeguarding the preservation of a diversity of species on earth. The agreement was signed by 156 countries in Rio, while the United States provoked the entire world by abstaining.

"It is encouraging that the United States will now participate, especially because this gives the bioconvention added weight. But at the same time Clinton has indicated that the country's skepticism concerning some

of its contents has not changed. He has hinted to the EC and Japan that the United States will try to influence how the paragraphs on biotechnology, patent questions, and the financing of the agreement are interpreted and complied with in practice," Schei said.

Iran's Ruhani Urges Completion of Nuclear Reactor

*LD2804224893 Hamburg DPA in German
1413 GMT 28 Apr 93*

[Text] Bonn (DPA)—Federal Foreign Minister Klaus Kinkel today met the influential Iranian Deputy Speaker, Hasan Ruhani, who is in Bonn at the head of a Majles delegation for talks on strengthening cooperation. Earlier, during a meeting with Bundestag deputies, Ruhani, who is also a member of the Supreme National Security Council, stressed Iran's desire to expand economic cooperation through an extension of political and cultural relations.

However, in the economic sphere, he complained about the trade imbalance and the lack of German investment. In 1992, Germany increased its exports to Iran by 18 percent to the record sum of nearly 8 billion German marks [DM], while imports shrank by 24 percent to DM 1.1 billion. According to the vice president of the Bundestag, Julius Cronenberg, he also asserted that Germany was under an obligation to continue the construction of the nuclear reactor in Bushehr. After the Islamic Revolution in 1979, Bonn halted the construction and regards the project as completed.

In a talk with Ruhani today, Cronenberg welcomed his statement that Iran had not sent a "killer commando" against the author Salman Rushdie and expressed the hope that this would remain the case in future. [passage omitted]

According to Friedrich Vogel, the chairman of the Bundestag subcommittee for human rights, the Iranian deputies rejected criticism of the human rights situation in their country, referring to cultural differences. The UN Human Rights Commission and the UN special envoy Galindo Pohl, who had been barred from entering Iran, were "biased." Ruhani for his part criticized the discrimination against Muslims and the freedom of movement in Western countries, including the Federal Republic, of the so-called "People's Mojahedin" [Mojahedin-e-Khalq], who should be regarded as terrorists.

According to German deputies, no specific information was given on the fate of the 58-year-old German Helmut Szimkus, who was sentenced to death for espionage in Teheran in 1992. Ruhani had pointed out that, to his knowledge, the case has not yet been closed and that the Iranian judiciary is independent. Bonn has long been concerned with the Szimkus case and has repeatedly expressed its expectation that the death sentence would be commuted to a prison sentence.

The Greens today criticized the invitation extended to the Majles representatives by the Bundestag Foreign

Affairs Committee. Bonn must link the continuance of relations with Iran with the preservation of human rights, the lifting of the fatwa against Rushdie, and the end to the "terror" against the Iranian opposition.

[Hamburg DPA in German at 1538 GMT on 28 April reports that "Federal Foreign Minister Klaus Kinkel said today during his meeting with Ruhani that the expansion of relations desired by Teheran first required the clarification of several points. This included, the Foreign Ministry announced after the talk, the human rights

issue, the Rushdie case, and the end to the uncertainties regarding the situation of the German engineer Szimkus. Kinkel praised, in principle, Tehran's efforts for a 'future-oriented shaping' of relations with Germany, according to this information.

["Ruhani stressed that Iran did not have the ' slightest intention' of producing or procuring nuclear, biological, or chemical weapons. Neither did Iran have any problems about submitting its nuclear program unreservedly to foreign control."]

KENYA

EC Grants 216 Million Shillings for Wildlife Programs

EA2904215993 Nairobi Kenya Broadcasting Corporation Network in English 0400 GMT 29 Apr 93

[Text] The EC has approved a grant of 216 million shillings for the funding of the protected areas and wildlife service project. A release to KBC news room from the delegation of the commission of the EC offices in Nairobi, said the funds would be used for elephants' conservation and community wildlife programs.

The project which is being supported by a number of donors will be managed and implemented by the Kenya Wildlife Services. It will be used to halt the decline of Kenya's wildlife, and its system of national parks and reserves, and to develop a sound foundation for the tourism industry in the country. The project will commence immediately and it should be able to be completed within three years.

ZAMBIA

Environment Still Heavily Polluted

93WE0378A Lusaka SUNDAY TIMES OF ZAMBIA in English 28 Feb 93 p 5

[Text] Zambia's environment is still heavily polluted despite the existence of the national environmental council and punitive legislation for offenders.

Environment and Natural Resources Minister Mr Keli Walubita said during the week that the Zambia Cooperative Federation (ZCF), working with his ministry, had

failed to get rid of 50 metric tonnes of toxic waste which posed a danger to underground water supplies in Chingola.

Mr Walubita said the environmental council had come forward to assist ZCF to get rid of the waste which was over nine years old but could not do much as it did not have the special chemical to get rid of the waste.

He appealed to individuals and organisations to help get rid of the toxic waste.

He acknowledged that efforts to get rid of toxic waste dumped by BP Zambia in Chingola, had come to nought.

Environment inspectors had tried to get rid of the waste by neutralising it but this proved ineffective and needed further treatment which neither ZCF nor the ministry had the capacity to deal with.

Mr Walubita said dumping sites for domestic and industrial waste had been identified throughout the country while toxic sites had yet to be demarcated.

The environmental council had completed working out standards and regulations to guide the ministry in dealing with pollution.

The proposals were presented to the Ministry of Legal Affairs for study before ratification by Cabinet.

On air and noise pollution, Mr Walubita said neither his ministry nor the environmental council had the personnel to manage these two areas at present but hoped by April, the posts advertised would be filled.

He stressed there were other areas that his ministry was engaged in which had an impact on pollution control.

"The council is working with USAID to carry out environmental impact assessment relating to all companies being privatised so that new owners will know what they are letting themselves in for and how to treat effluent."

Protection of Ecology in Upper Reaches of Yangtze River Urged

93WN0342E Kunming YUNNAN RIBAO in Chinese
4 Feb 93 p 5

[Text] According to JINGJI RIBAO, a report submitted to the State Council revealed some shocking news: uncontrolled logging of forests in the upper reaches of the Yangtze River has led to an ecological nightmare. Silt and gravel flow down the river during high water season and flooding has not only caused great losses in life and properties in provinces and cities along the river, but also become the number one threat to the "Three Gorges Project" construction.

This report was co-authored by Yu Guoyao [0151 0948 5069] of the State Council Research Office, and Li Weihui [2621 4400] and Ao Zepu [2407 3419 2528] of the Sichuan People's Committee. It pointed out that logging has long been the main business in the forest in western Sichuan, which is the largest water sources reserve in the upper reaches of the Yangtze River. Large-scale logging has led to a sharp reduction of forest resources and an increasingly deteriorating ecological condition. Geological changes and land morphology changes, together with erosion, have caused the damage zone to expand rapidly.

Measurements showed that in the last 10 years the amount of sand and silt flowing into the Yangtze River has increased to 700 million tons, equivalent to 5 inches of land over an area of 500 mu. Many dense forests have turned into bare mountains. Flood, drought, and snowstorms occur frequently. Excessive logging has greatly reduced the modulating ability for a forest to hold water, reduce flood, and retain water. The water flow during flood season and low water season differs by a factor of 3 or 4. Most of western Sichuan is mountainous and cold; replenishment of vegetation is very difficult. Reduction of forests has changed local weather and greatly increased the sand area of the upper reaches tributaries. World famous national level resort areas like Jiuzhaigou and Huanglongshi are threatened by water shortages and the habitat for rare and endangered animals and plants is shrinking.

The report opines that if the situation does not receive proper attention and effective action, the beautiful Yangtze River will become the second Yellow River.

State Plan on Gradually Eliminating Ozone-Depleting Substances Ratified

93WN0342D Beijing ZHONGGUO HUANJING BAO
[CHINA ENVIRONMENTAL NEWS] in Chinese
9 Feb 93 p 1

[Article by Wang Ya [3769 1246]]

[Text] The State Council recently ratified a plan to gradually eliminate ozone-depleting substances in China. The plan was submitted by 11 departments including the State Environmental Protection Bureau, the Foreign Affairs

Ministry, the State Planning Commission, and the State Science and Technology Commission.

China signed the "Vienna Convention on Ozone Layer Protection" in September 1989 and the "Montreal Protocol on Ozone-Depleting Substances" in June 1991. To implement these two international agreements, China received some timely funding and technological support from the multilateral foundation executive committee of the Montreal Protocol. Under the coordination of the State Environmental Protection Bureau, Beijing University was commissioned by the Ozone Layer Protection Leadership Group to compile a "Plan to gradually eliminate ozone-depleting substances in China." The plan carefully collected statistical data on the production and consumption of ozone-depleting substances in China, scientifically evaluated the development trend and advances of substituting materials, and formulated an action plan for China's effort to eliminate ozone-depleting substances. The plan has now been submitted to the United Nations Development Plan Agency and will be discussed at the 7th meeting of the Multilateral Foundation Executive Committee for Ozone Layer Protection in March of this year. In the meantime, China's first batch of investment and demonstration projects on reducing ozone-depletion substances are under way.

Resolution on Strengthening Execution of Environmental Law Passed

93WN0342C Beijing ZHONGGUO HUANJING BAO
[CHINA ENVIRONMENTAL NEWS] in Chinese
9 Feb 93 p 1

[Article by Guang Feng [1639 0023]]

[Text] In the recent 24th Meeting of State Council Environmental Committee, a resolution was passed to strengthen the execution of environmental law and to crack down on illegal activity.

It was pointed out in the resolution that there has been a 20-year history in China's environmental protection effort. Under the leadership and attention of the various level governments, efforts have led to major progress and a Chinese style environmental protection has been established. The government has formulated a series of policies, regulations, systems and associated measures. The 14th Party Congress has made environmental protection one of the 10 major tasks for reform and development in the 1990's. It called for conscientious implementation of the fundamental national policy of environmental protection and set a higher standard for environmental protection in China. For the present and the next few years, the emphasis in environmental protection is to make full use of the legal power in enforcing the law, to put the established policies, regulations, plans, standards, and systems on a solid basis, to monitor the implementation situation, and to quickly stop the behavior of ignoring the law and punish those who are not enforcing the law. We should seriously treat cases of environmental protection law violations and wild

animal protection law and cases of severe pollution and ecological damages and illegal acts toward rare and endangered species. Severe violations should be dealt extraordinary penalties.

The resolution requested governments at various levels to act quickly to put the legal construction of environmental protection on their agenda. The governments should seek the support and assistance of various levels of people's congresses and political associations in strengthening the enforcement of environmental laws. Plans should be made for whole-population legal education and cracking down on illegal acts. Efforts should be made to review the implementation of the laws and to report the review results to the pertinent level of people's congresses. Enforcement of environmental protection laws should be made one of the major criteria in reviewing government performance. In reviewing the law enforcement functions of governments, units that did not make serious effort to enforce the law must be criticized severely and straightened out. Failure to perform environmental impact evaluation, failure to implement the "three simultaneous" system, failure to pay pollution fines, unauthorized dismantling of pollution prevention devices or failure to use them, refusing on-site inspection by environmental monitoring departments, and falsifying and cheating must be prosecuted to the full extent of the relevant environmental protection laws. Negligence of duties and playing favoritism that resulted in pollution incidents, illegal hunting and killing of animals, and illegal businesses involving wild animal resources must be cracked down on severely according to the applicable law. Behaviors that constitute a crime must be prosecuted by the law enforcing departments for criminal responsibility.

The resolution called upon the various departments, especially the environmental protection, forestry, agricultural, commerce, export, custom, trade, public security, and judicial departments, to do a good job in enforcing the environmental protection law, to strengthen coordination and cooperation, and to work together in punishing illegal acts against environmental protection and wild animal protection laws. The resolution stressed that environmental protection departments must use their authority bestowed by law and effectively enforce the law. Major environmental violation cases must be thoroughly investigated and prosecuted publicly.

The resolution also asked the news media to actively assist the inspection of environmental law enforcement and broadly publicize the cause. Names of major violators and units should be publicized and criticized. The news media should educate the public about laws, regulations, and scientific knowledge on environment, raise the environmental awareness of leaders, and promote conscious participation of the masses in the fight against illegal behavior.

China's Tactics in Environmental Diplomacy

93WN0340A Beijing ZHONGGUO HUANJING BAO [CHINA ENVIRONMENTAL NEWS] in Chinese
13 Feb 93 p 3

[Article by Wang Yi [3769 3015]]

[Text] The development of environmental problems is quickly spreading over into social, economic and political arenas and affects every corner of the world. Environmental protection has become a hot issue in international relations and attracted wide attention. Resolving environmental conflicts between countries and seeking international cooperation will be increasingly important activities in international diplomacy for a long time to come. If China does not pay attention to environmental diplomacy and carry out careful long-term planning in this area, it will be in a passive position in international environmental conflicts, which may directly affect the reform and modernization process in China.

I. Background for the Rise of Environmental Diplomacy

Environmental diplomacy came about from the evolving world situation and the expanding environmental problems.

1. After the End of the Cold War, Environmental Problems Became Increasingly Acute

During the Cold War, nuclear war was considered to be the greatest threat to mankind. Diplomatic activities revolved around politics and military issues in order to prevent an eruption of a new world war. With the end of the Cold War, the bipolar situation has stopped and the threat of nuclear war has decreased. Although international security has improved, problems overshadowed by the bipolar conflict have emerged. Territorial conflicts over the development of resources have sharpened, and the call to redistribute power and wealth is becoming louder. Environmental problems are becoming increasingly acute, and are likely to replace nuclear war and become the central problem in the next century regarding the survival and development of humankind. Environmental problems are also central issues in the emerging new world order. Solution of the environmental problems is a real test of the future international structure; it will definitely be an important issue in international relations in the 1990's.

2. The Globalization of the Environmental Problem Promoted the Development of Environmental Diplomacy

Today's environmental problems are not only intimately related to the economic activities of the entire society, but are also global in nature. They are global in the following sense. First, countries have encountered various environmental problems in their development, such as the aggressive development of resources and the increase of pollutants. Second, environmental problems, such as acid rain and trans-border transfer of poisonous and hazardous waste and chemicals, have crossed national borders. Third, as the countries are plagued with environmental problems, the human race is facing

global changes such as global warming and ozone depletion, that can threaten their very existence and development. The global nature of the environmental problems makes environmental protection an issue of the entire world and mankind. No one country or region can solve the environmental problem by themselves; it takes the whole international community. This has greatly accelerated the pace of environmental diplomacy.

3. Development of Environmental Diplomacy

Environmental diplomacy was first proposed by Japan's Ministry of Foreign Affairs in 1989, which formed a special working group to look at global warming, environment and development, and prevention of rain forest depletion. Japan was also prepared to make use of its strong economic power to develop environmental technology, funding, and cooperation. Actually bilateral diplomatic activities for resolving environmental problems began more than 10 years ago, such as the acid rain negotiation between the United States and Canada. Later, some progress was made in regional environmental cooperation, such as rain forest protection meeting held by countries in the Amazon area. Since 1989, multi-lateral environmental diplomacy has been on the rise and there was a continuous flow of international environmental meetings. International documents signed included the "Vienna Convention on Ozone-Layer Protection" and the "Montreal Protocol on Ozone-Depleting Substances." The United Nations established standing organizations and foundations for environmental protection. In June 1992 a United Nations environment and development meeting was held in Brazil and leaders of attending countries signed five important documents. They were the "Rio Pronouncement on Environment and Development," "Agenda 21," "Statement of Forest Principles," "Framework Convention on Climate Change" and the "Convention on Biological Diversity." This meeting has become a new milestone for global environmental protection and environmental diplomacy.

II. Problems Faced by Environmental Diplomacy

1. Differences in Recognition by Various Countries of Environment and Development

The world trend for environmental protection and the move toward a peaceful international scene have provided opportunities for the deteriorating environment. However, differences in wealth and recognition of the environment by various countries have formed different interest groups with their own agenda. A logical starting point for common action did not exist. Conflicts among the interest groups naturally affected the solution of global problems. The perception of environmental problems by developed nations and developing nations was particularly divergent. At a more advanced stage of development, developed nations pursue a higher standard of living and are more eager to solve the environmental problems. Developing countries, on the other hand, faced with the dual challenge of development and

environment, are more concerned about the development. Although environment and development are, in theory, complementary and cannot be isolated, in reality not one country has pursued environmental goals at the expense of economic development. In dealing with development and environment, there is a worldwide dilemma and environmental diplomacy still has a long way to go.

2. Complexity of Multi-Lateral Environmental Diplomacy

In the current multi-lateral negotiations, a number of substantial problems still must be resolved. These include the issue of primary responsibility for global environment, national sovereignty and international intervention, monetary assistance and technology transfer. On these issues developed and developing countries are having an endless argument. Developing nations stress the point that current global environmental problems are mainly the results of blind industrialization by developed nations over the last century. Developed nations should therefore provide new, extra, and ample environmental funds to developing nations above and beyond the current assistance for development. Noncommercial and preferential technology transfer should also be necessary compensations for the environmental deprival. Developing countries also stressed their special environmental problems and needs and demanded the sovereignty to develop their resources without interference by other countries on account of environment. The developed nations, on the other hand, accused the developing nations of damaging the ecology, polluting, and disregarding environmental protection. To this end, they have set up various limitations. The complexity of international environment affairs will undoubtedly make the multi-lateral environmental diplomacy a long process indeed.

3. Uncertainty in Global Changes

Global changes could bring great disaster to mankind. Based on current research, the effects of emerging factors still cannot be determined. These factors include carbon dioxide concentration in the atmosphere and its global and regional effects, artificial and natural activities and their effects on global changes, and endurance of the environment and prospects for science and technology advances. Global changes may bring totally different results. It is obviously unscientific to base environmental diplomacy and environmental management solely on uncertain factors. Many experts think that it will take at least 10 years of research to sort out the causes for global changes. We should be fully aware of this. This is not to say that there is no risk. The danger is precisely in the uncertainty about the results of global changes; what awaits us in the near future may be an unknown great danger. We should not ignore this.

4. The Long-Term Nature of Environmental Problems and the Uniformity of Solutions

The emergence and development of the environmental problems are meshed with the entire nature process of human development; they are long-term problems faced by mankind. As the population grows and the economy develops, short-term behaviors of mankind may place great stress on the environment. In the interconnected world, the deterioration of the environment will not turn around without concerted effort by mankind. In the meantime, the solution of environmental problems will have a profound impact on global politics, economy, and technology. Countries should assume their own responsibilities and follow the principle of sustained survival and development. They should communicate with each other to improve mutual understanding, and work together to make the globe a better place.

III. National Interests in China's Environmental Diplomacy

The role and effects of today's environmental diplomacy have long extended beyond simply solving environmental problems. All the countries have considered environmental diplomacy an important strategic activity and strove to gain more practical benefits and a more favorable position in the future world through the competition of leadership positions on environmental issues. To this end, China should carefully review its position and national interests in order to place itself in a no-lose situation in severe competitions in the future. China's environmental diplomacy policy should serve at least the following interests and goals.

1. Make Sure That China Has the Sovereignty To Develop Its Own Resources and To Import Resources in a Stable Manner

China is a country with rich resources. Because of the large population, the per capita ownership of major resources in China is less than one-half or one-third of the world average; the supply and demand situation of resources is acute. The energy structure based on coal will not change in the short term. This means that China will be mining coal on a large scale for some time to come, and also that the release and precipitation of carbon dioxide associated with inefficient burning of coal may attract international attention. In addition, China's import of forest and mineral products has been steadily on the rise over the years; China has become a resource importing nation. In the future, China's per capita ownership of resources will drop, per capita consumption will rise, the national economy will enter a resource and energy intensive period, and the demand on the total resources and energy will increase quickly. Since domestic resources cannot satisfy the demand, large-scale import of resources will be inevitable. Therefore, in dealing with international environmental issues, China should insist on the right to develop its own resources and to trade freely while adhering to the common responsibility of not damaging other countries' environment.

2. Pursue Additional Capital and Technological Assistance

When developing countries strive to solve environmental problems, the greatest difficulty is the shortage of capital and technology, China is no exception. As a large country with abundant resources, China needs a great deal of capital to develop domestic resources and to develop large-scale capital construction and transportation network. At the same time it needs to promote economic growth and improve its ecological environment. China therefore needs capital urgently. Most of China's industries were developed from the 1950's to the 1970's. More than half of its industries are in a backward state, which is the direct cause for its low utilization of resources and environmental pollution. In China's massive technological improvement and industrial structure adjustment, China needs ample capital and advanced technologies that conform to environmental requirements. Through environmental diplomacy, China wishes to obtain more commitments and real benefits in capital and technology so that it can solve its own environmental and development problems.

3. Raising China's International Stature

The national strength and environmental characteristics dictates that China must play an important role in negotiations of international environmental issues. On the one hand, it is impossible to solve the world's environmental problems without the participation of large developing countries like China, on the other hand China cannot isolate itself from common actions. China should participate in international activities with a positive attitude and is also responsible for making its own contributions. Today, environmental issues have become important chips in the north-south negotiations; China should make use of it and play the role of a major country. China should therefore protect the legal rights of developing countries in environmental and developmental issues and at the same time strengthen its tie with Western developed nations, develop bilateral and multi-lateral cooperation, and seize political initiatives to establish itself as a major country in the next century.

IV. Preliminary Thoughts on China's Future Environmental Diplomacy

1. Formulating a Long-Term Environmental Diplomacy Strategy

The road of future international environmental diplomacy activities will be long and winding; multi-lateral negotiations will be a repeated give-and-take process. Delay time will be associated with the signing of common action outlines and various agreements. China must therefore look forward, carefully study the trends in international environmental issues, formulate a long-term strategy, make full use of the conflicts and intense competition between different countries to seek opportunities for self-development. The fundamental principle of environmental diplomacy strategy is to combine the national interests with the survival of mankind and to

make it consistent with the overall strategy of national development. Because of the complexity of today's environmental issues, many departments are involved. In China's participation of international environmental matters, the individual and department forces are rather diffused. We therefore recommend that the responsibility be given to the environmental protection committee of the State Council to quickly formulate a long-term strategy and to coordinate the various forces in China in order to actively participate in international environmental matters.

2. Basic Tasks in China's Environmental Diplomacy

China's environmental diplomacy should develop in three fronts. First, China should strengthen environmental diplomacy with its neighboring countries. Problems to be settled are cross-border environmental disputes and land and sea territorial disputes associated with resource development. The former refers mainly to the acid rain problem and the latter refers to the ownership and development of the Nansha Islands and Diaoyu Island. The islands and oceanic territories in Nanhai have particular significance for China's future development. China should take every measure to maintain sovereignty and property rights over these islands, strengthen the corresponding political and military power to ensure a satisfactory resolution of the problems. In the meantime, China should step up the pace toward unification. Second, China should maintain a sound trade relationship with major resource exporters and major economic countries, establish steady bilateral cooperation relations with exporters of agricultural products, iron ores and petroleum to provide material resources for future development. Finally China should have broad cooperation with developing countries, support their reasonable requests, coordinate the stance, take common action, and handle acute problems in global environment.

3. Domestic Policies To Match Environmental Diplomacy

The world trend of environmental protection may be exploited for the promotion of environmental protection within China. Conversely, solutions of environmental problems in China can be major contributions to the global effort and great assistance to China's environmental diplomacy. Participation in international matters must be backed by competitiveness in all areas. To this end China must control its population growth, improve its population quality, adjust its domestic energy policy, use and conserve energy rationally, accelerate technological reform and industrial structural adjustment, establish a resource-saving national economy, put its land in order through reforestation, river management and soil conservation, implement an environmental crisis management plan for incidents, prevent environmental incidents with international impact, develop scientific studies of global changes and their effects on China, and to build a sound foundation for environmental management and environmental diplomacy policy.

Ecological, Environmental Monitoring in Three Gorges Begins

93WN0342B Beijing ZHONGGUO HUANJING BAO /CHINA ENVIRONMENTAL NEWS/ in Chinese
23 Feb 93 p 1

[Article by Wu Xueda [0702 1331 1795] and Liao Zhengxiang [1675 2973 7449]]

[Text] Entrusted by the Changjiang Three Gorges Development General Company, the Changjiang River Valley Water Resources Protection Bureau of the Changjiang Water Conservancy Committee sent out an ecological and environmental monitor team on 1 February. Based on the requirement of ecological and environmental design, the team will conduct full-scale monitoring of the Three Gorges dam zone. Sample analysis will be performed by the Three Gorges Water Environment Monitor Center at the Gezhouba Hydraulics Experiment Station under the Changjiang Water Conservancy Committee.

The targets for monitoring are the atmosphere, noise, soil, plants, bulk water environment of the main branch and tributaries of Changjiang, and bottom precipitant. Measurements include 37 items of metal compounds, trace elements, non-metallics, organic pollutants, bacteria and microbes and others. At the same time, erosion of concrete will also be monitored. From 2 February to 10 February, the monitor team successfully completed the first batch of on-site sample collection. Analysis is under way and an interim report will be submitted at the end of the month.

In addition to the monthly monitoring of 36 items for the main branch water environment of the Three Gorges, this was the fifth random monitoring. Throughout the course of the monitoring, quality was strictly assured and controlled.

State Environment Monitoring Network Officially Established

93WN0342F Taiyuan SHANXI RIBAO in Chinese
25 Feb 93 p 4

[Text] China's state environmental monitoring network was officially established on 24 February. According to Qu Geping [2575 2706 1627], director of State Environmental Protection Bureau, because environmental protection involves many aspects and departments of the society, China should broadly and effectively conduct environmental monitoring in order to have timely and dynamic information on environmental quality and pollution, which are needed in better serving the economic development and environmental management.

It was reported that, after a decade of effort, China's environmental monitoring effort has matured considerably. Environmental departments have established 2,043 environmental monitoring stations, which employed more than 30,000 people. This complete monitoring system provides the environmental departments 10 million pieces of data per year regarding the atmosphere,

surface water, noise, offshore, radiation, biology, soil, and ecology. These data are an indicator of environmental quality and pollution release situation; they provide useful scientific basis for environmental management and policy making. In the meantime, departments for oceans, water conservancy, agriculture, transportation, mining, the People's Liberation Army, and industrial departments have also formed their own environmental monitoring organizations and built more than 2,000 monitoring stations.

Resettlement in Three Gorges Area Officially Gets Under Way

93WN0342A *Shanghai WEN HUI BAO* in Chinese
8 Mar 93 p 1

[Article by Shi Yongfeng [2457 0516 1496] and Wu Tao [0702 3325] from Yichang and Ping Zhujiang [1627 3796 3068] from Tianjin]

[Text] Population relocation associated with the Three Gorges project, which has attracted worldwide attention, has progressed from test point to formal implementation and is about to quicken. According to the Three Gorges Area Economic Development Office of the State Council and the Changjiang Water Conservancy Commission of the Ministry of Water Conservancy, 540 hectares of land were expropriated and more than 6,100 residents have moved into new housing.

The Three Gorges relocation is a formidable task. Based on the plan of a 175-meter normal water level, 632 square kilometers of land will be flooded, which involves 19 counties (cities), 13 county seats, 140 towns and 4,500 villages in Sichuan and Hubei. The population of the flooded zone is 720,000. From 1985 to 1992, the government has invested a total of 460 million yuan for test point relocation in the Three Gorges region.

In order to have an early start on the construction, relocation in the Three Gorges region has accelerated. In Yichang and Zigui counties in Hubei Province, relocation is in full swing. By the end of March, 2,700 people will move to vacate 3,058 mu land for construction.

The Three Gorges Project Experimental Building, a high priority project sponsored by the Hydraulics Department of the Ministry of Transportation, broke ground in Tanggu, Tianjin.

This experimental building will be a 1:100 scaled model of a 7,400 square meter area in the Three Gorges dam zone. The total cost will be 4.71 million yuan. The model will be based entirely on the water level, flow rate, and natural geological conditions of the Three Gorges. After the building is completed, simulation experiments will be performed to provide reliable data for navigation in the Three Gorges dam zone.

Polluters Will Be Prosecuted

40101012A *Beijing CHINA DAILY* in English
8 Apr 93 p 1

[Text] The Chinese State Council has issued a circular on enhancing environmental protection and cracking down on violators.

The circular says environmental protection is one of China's basic State policies. The council has formulated a series of laws and regulations, as well as policies and measures, against pollution.

It notes that the central task is to enhance supervision over the implementation of these and to deal with illegal activities which result in grave pollution and severe damage to the ecology.

The council calls on governments at all levels to put environmental protection at the top of their agenda and to enhance implementation of the laws.

They should report their performances on implementing the laws to People's Congresses, the council says.

The circular also calls for combined efforts by the departments of environmental protection, forestry, agriculture, water conservancy, construction, industry and commerce, foreign trade and public security as well as the press in dealing with severe illegal cases. (Xinhua)

Nuclear Power Plant Monitoring System Operating Normally

OW2404061393 *Beijing XINHUA Domestic Service* in Chinese 2132 GMT 16 Apr 93

[By reporter Shen Haixiong (1957 3189 7169) and correspondent Zhao Xiao (6392 2556)]

[Text] Hangzhou, 17 Apr (XINHUA)—After more than two years' experimental operation, the outer monitoring system of the Qinshan Nuclear Power Plant—the first nuclear power station on the Chinese mainland—has fully met its design requirements. At the same time, an environmental radioactive background survey and regular operational supervision of the power plant have been successfully completed, and an emergency monitoring exercise outside the plant was successfully conducted. At a meeting on 14 April to examine and approve the plant's monitoring capabilities, experts from the State Environmental Protection Bureau and from across the country unanimously held that the normal operation of the Qinshan Nuclear Power Plant's outer monitoring system is an important milestone in the country's radioactive environmental protection, and that this was the first time China had successfully conducted continuous supervisory monitoring over a nuclear power plant. The supervisory monitoring met international standards for the supervisory monitoring of nuclear power stations. The State Environmental Protection Bureau issued a circular to commend the

Zhejiang Provincial Radioactive Monitoring Station, which is responsible for the Qinshan Nuclear Power Plant's monitoring work.

As China's nuclear power industry has developed from nothing, it has become a problem of concern for people across the country on how to stringently and effectively supervise these sources of nuclear pollution in order to protect the environment and to ensure that the country's nuclear power industry develops healthily. According to the "PRC Environmental Protection Law" and the state's regulations on environmental protection, Zhejiang built the country's first environmental radioactive monitoring station in 1987 to conduct continuous supervisory monitoring over the Qinshan Nuclear Power Plant.

The Qinshan Nuclear Power Plant's outer monitoring system consists of a surveillance monitoring system, a laboratory monitoring system, and a mobile monitoring system. All technical specifications of the monitoring system were designed to meet international practices. Six high-voltage ionization chambers for automatic continuous monitoring, which are a part of the surveillance monitoring system, have been set up at various positions around the power plant. These ionization chambers generate a number every 30 seconds, which is transmitted to the headquarters in Hangzhou after it is processed through a computer. The laboratory monitoring system in Hangzhou measures radioactivity from all kinds of environmental media, as well as the total quantity of radioactivity, and specialized environmental monitoring cars conduct round the year continuous mobile monitoring of the environmental radioactive levels around the power plant.

Experts in this field have said that the first successful continuous supervisory monitoring of a nuclear power station not only has filled a void in the country's monitoring over radioactive environments, but also has enabled China's nuclear power station's outer monitoring technology to reach international levels.

Foreign Funds To Be Used for Curbing Chronic Soil Erosion

40101012B Beijing CHINA DAILY (National)
in English 10 Apr 93 p 3

[Article by staff reporter Liang Chao: "China Gets to Grips With Soil Erosion on Plateau"]

[Text] China is to use foreign funds to curb chronic soil erosion on the Loess Plateau, one of its worst-affected areas in the Yellow River basin.

The loss of the area's soil is so serious that 430,000 square kilometres of land of a total of 600,000 square kilometres in Shaanxi, Gansu and Shanxi provinces and the Inner Mongolia Autonomous Region in North and Northwest China suffer severely either from water, wind or gravitational erosion.

To augment the area's erosion-control, long restricted by the shortage of funds, the Ministry of Water Resources and the State Planning Commission have applied to the World Bank for a large loan to improve the environment.

Since 1949, the government has only earmarked 1.4 billion yuan (\$245 million) or about one-eighth to one-ninth of the amount needed, for the area's soil-erosion control, experts complained.

"The loan, however, not only represents a significant breakthrough in China's reform of its water conservancy investment mechanism, but opens prospects for seeking more new input channels in a sweeping erosion-control programme," officials said.

The erosion-control programme, involving an estimated \$150 million loan expected from the World Bank, would be "a significant project toward building the area into a high yield, quality and efficient grain producer," experts who participated in its feasibility study said.

Negotiations between the World Bank and China and various preparations for the programme, initiated in 1990, have been going on smoothly so far this year.

The programme's macro planning by the four affected provinces and the overall and special feasibility studies and analyses of its economic benefits were highly appreciated by the latest survey group from the World Bank.

While preparing to accept the World Bank's assessments, China is speeding up the preparation of the programme's economic and technological details and securing the domestic funds.

The proposed erosion-control zone includes a total of 16,000 square kilometres of eroded land in the four province's 22 counties and seven prefectures along the middle reaches of the Yellow River.

Under the programme, about 60 per cent of the area's more than 576,200 hectares of heavily eroded land will be brought under effective control in eight years.

By then, experts said, the area's vegetation and forest cover are expected to reach nearly 41 percent, compared with only about 6 percent for the entire Yellow River Valley.

The envisioned work is capable of reducing the sediment washed away from the area by 40 million tons per year or 5 percent of the annual total.

With the help of the programme, millions of farmers living in the middle and lower reaches of the Yellow River are expected to be brought up from the poverty they suffered for decades, official said.

Accordingly, the area's annual per capita grain yield would be increased from the present 367 kilograms to more than 530 kilograms, as farming conditions are improved.

Annually, erosion is washing away as many as 1.6 billion tons of silt from the Loess Plateau, with 400 million tons being deposited in the bed of the lower reaches of the Yellow River, making it the world's muddiest.

The deposited silt raises the riverbed by 10 centimetres each year, threatening the locals' lives and the area's farming.

As a result, agriculture there largely lagged behind neighbouring areas. One-third of China's poorest counties are in that area, where most locals live in an absolute poverty with only about 200 yuan (\$35) of annual net per capita income or less, far below the government-set poverty line.

Water Woes Still Grip Capital, 49 Other Cities

40101009C Beijing CHINA DAILY (National)
in English 21 Apr 93 p 3

[Text] Beijing has made great strides in water conservation in recent years, but there is still a long way to go. And the capital is just one of China's 50 major cities that suffer from serious water shortages.

This city has been attaching great importance to conservation for the last 12 years.

More than 100 million cubic metres was saved last year, about 17 million of which was tap water, according to a report released by the city government yesterday.

The report also says that the rate of circulatory utilization of industrial water was raised to 82.5 percent last year, 0.2 percent more than the year before.

This was attributed to effective implementation of the regulation on saving water, which was issued by the municipal government in November 1991.

The city's government is encouraging water users to apply new technologies more widely to save water.

More than 7 million cubic metres, it is estimated, can be saved through application of water-saving technologies.

According to the report, about 3.8 billion cubic metres of water will be used this year, 1 billion in industry, 2 billion in agriculture and about 800 million for residential use.

The municipal government plans to save 52 million cubic metres of water this year and raise the rate of circulatory utilization of industrial water to 82.6 percent.

More than 40,000 sanitary devices will be replaced by water-conserving types this year.

China's water resources are often augmented by run-off from rainfall. The total run-off from rainfall in Beijing last year was 493 millimetres, 113 millimetres less than the annual average level.

The meteorological station says the run-off from rainfall this year will be almost the same as that of last year.

The underground water table has been lowered by one metre this year and excessive extraction of underground water will make conditions even worse.

Daily tap water supply will reach a level of 1.8 million cubic metres. The daily level can be brought to 1.85 or 1.93 with conservation measures.

Some parts of the city will experience severe water shortages when encountering hot days.

However, heavy waste of water is common. Poor water-saving management by some units and the lack of a sense of conservation among the populace are the main reasons for this.

Some leaders of heavy water-consuming factories, such as iron and steel plants and textile mills, often get instant benefits at the expense of wasting water.

At yesterday's water-saving convention, several units and individual people were praised for their efforts in saving water. Meanwhile, several units were fined for wasting water.

Environment Bond Signed in Montreal

40101009A Beijing CHINA DAILY in English
19 Apr 93 p 1

[Text] Ottawa (Xinhua)—Canada has signed a memorandum of understanding aimed at promoting environmental co-operation.

The document was signed in Montreal by the Chinese administrator of the National Environmental Protection Agency, Qu Geping, and Canadian Environment Minister Jean Charest.

The memorandum, for five years, is designed to develop contacts and co-operation between the two countries at the various levels of government, research centers, universities, the private sector and other institutions.

It provides for exchanges of personnel and scientific and technical information as well as technology transfers, symposiums and seminars. It also calls for the two countries to develop a two-year work programme to address mutual environmental concerns.

The memorandum sets out new priorities, including the development and implementation of environmental protection laws, regulations and policies covering such issues as climatic changes, air pollution, the ozone layer and pollution controls.

As a first initiative under the agreement, Canada and China will conduct a joint study on the greenhouse effect and develop an emissions control strategy for Beijing.

Power Fees To Help Pay for Dam

40101009B Beijing CHINA DAILY [BUSINESS WEEKLY] in English 19 Apr 93 p 1

[Article by Xiao Kan]

[Text] China will use various channels to raise domestic capital for the construction of the Three Gorges Dam, the largest project of its kind in the world.

Xu Xiangsheng, head of the Construction Bank of China branch that is focusing on Three Gorges Dam project, said China has the capacity to raise the money for the construction of dam although the project's total input may exceed 159 billion yuan (\$26.3 billion)—taking inflation into account.

He said the most important channel is setting up a construction fund for the dam.

The funds will come from three major capital sources:

- The State raised electricity charges last year, which will result in 2 billion yuan (\$350 million) annually exclusively for the dam project.
- The State will hand over the profits from the Gezhou Dam Power Plant and raise the price of electricity generated by the plant gradually, which will also result in 700 million yuan (\$122.8 million) for the dam project annually.
- The State will allow the dam to keep all its income when it starts to generate electricity until the construction is fully completed. The income will amount to 40 billion yuan (\$7 billion).

Also, the country may gradually issue stocks or construction bonds to domestic institutions and individuals if necessary.

Xu said China will also actively seek foreign capital in the form of foreign government loans and overseas syndicated loans.

And the country can also issue shares and bonds to overseas investors.

But Xu points out that all this foreign capital may account for less than 10 per cent of the project's total investment.

The construction of the dam project has been debated hotly for four decades. One of the main questions was whether the country had the money to build the mammoth project.

The project was finally given official approval last spring by the National People's Congress, China's highest legislature.

UNDP To Help Phase Out Ozone-Depleting Substance Production

OW2404113693 Beijing XINHUA in English 0819 GMT 24 Apr 93

[Text] Beijing, April 24 (XINHUA)—The United Nations Development Program (UNDP) will assist China in developing a 2.1 billion U.S. dollar program to phase out use of ozone-depleting substances, according to UNDP sources today.

Under a comprehensive action plan mapped out with assistance from UNDP, China has embarked on a massive effort to completely phase out the use of ozone-depleting substances (ODS) by the year 2010.

Funding for China's ODS program—estimated to cost 2.1 billion U.S. dollars over the next 17 years—will be provided by a multilateral fund set up under the Montreal Protocol.

This fund helps developing countries meet the incremental costs of switching from using chlorofluorocarbons and halons to other chemical substances that do not deplete the ozone layer.

Among developing countries, China is the largest consumer and producer of ODS, which are used in everything from refrigerators and fire extinguishers to aerosol cans and foam for mattresses, seat cushions and food packaging.

In 1991, the Chinese Government selected UNDP as the lead agency to help it develop a comprehensive country program aimed at completely phasing out the use of ODS and promoting the production of more ozone-friendly chemical substitutes.

The action plan, which begins to be implemented this year, will involve more than 150 projects.

At the regulatory level, China will set up a permit and quota system requiring government permission for the manufacture of any ODS products.

The permit system will require ODS manufacturers to follow the phase-out schedule, or risk being shut down or penalized.

The government plans to restrict the import of ODS, raise taxes and prices for them, and strengthen laws aimed at controlling their use.

The government also plans to support the local development and production of ODS substitutes and encourage investment policies that promote ozone-layer protection.

A special fund will be set up to support scientists and research institutions in the development of technologies that can contribute to the phase-out effort.

Public awareness about the importance of protecting the ozone layer will be raised through TV, radio, newspaper and magazine campaigns.

The government will also issue a green label for products that are either ODS-free or made with ODS substitutes. China has set target dates to end the use of ODS in aerosol cans by 1997

and the foam industry by the year 2000. All phase-out efforts are expected to be completed in the year 2010.

Presented by the Chinese Government at the ninth meeting of the executive committee of the multilateral fund held in Montreal last month, the UNDP-assisted country program was praised for its integrated mix of policies, incentives and technologies. It has been designated to serve as a model for other large countries in their effort to phase out ODS.

JAPAN

Plan To Put 5 More Wetlands Under Ramsar Convention Approved

OW1604101293 Tokyo KYODO in English
0928 GMT 16 Apr 93

[Text] Tokyo, April 16 KYODO—An Environment Agency council on Friday [16 April] approved the agency's registration of five more Japanese wetlands with the Ramsar Convention to preserve waterfowl and other wildlife.

The five are the Kiritappu marshlands and Akkeshi lake-Bekanbeushi wetlands in Hokkaido Prefecture, the Yatsu tideland in Chiba Prefecture, the Katano duck pond in Ishikawa Prefecture, and Lake Biwa in Shiga Prefecture, agency officials said.

The nature conservation council's latest decision brings the total of the country's wetlands registered under the treaty to nine, they said.

The agency will file applications for the registration with the convention secretariat in Vienna by mid-May to obtain a formal approval at the fifth conference of member nations in Kushiro, Hokkaido, from June 9-16, the officials said.

The conference will be the first of its kind held in Asia. The convention was established in 1971 and Japan joined it in 1980.

The Kiritappu wetlands and Bekanbeushi river system in eastern Hokkaido are havens for migratory geese, ducks, and swans to spend the winter season.

The Yatsu tideland in Narashino, Chiba Prefecture, close to Tokyo, is home to waterfowl such as snipes and plovers.

It will be the first coastal land in Japan to be registered under the Ramsar Convention, the officials said.

The Katano duck sanctuary in Ishikawa Prefecture, is the largest resting place in the Hokuriku region for waterfowl.

Lake Biwa in Shiga Prefecture, the largest freshwater lake in Japan, has lots of fish and plants. Some 50,000 geese and ducks annually use it for their migrations.

Tokyo Asks IAEA for Help on Russian Nuclear Waste

OW1604060393 Tokyo KYODO in English
0518 GMT 16 Apr 93

[Text] Tokyo, April 16 KYODO—Japan asked the International Atomic Energy Agency (IAEA) on Friday for help in monitoring Russia's dumping of radioactive waste in the sea and the effects of a nuclear accident in the Siberia town of Tomsk 7.

Mamoru Nakajima, director general of the Science and Technology Agency, made the request to IAEA chief Hans Blix, who is in Japan for an atomic energy forum.

The IAEA has already dispatched an investigation team to Tomsk 7 in western Siberia, but Nakajima asked that a Japanese specialist be included in the next research team formed by the monitoring agency.

Nakajima also requested the cooperation of the IAEA's laboratory on marine radioactivity in investigating the effects of Russia's dumping of radioactive waste and obsolete reactors into the Sea of Japan.

Blix replied that IAEA cooperation is possible in monitoring the sea dumping effects, if Japan and Russia can both agree on that.

It was reported earlier this month that the former Soviet Union and Russia had been dumping radioactive waste into the waters off Russia's far east coast, including the Sea of Japan, beginning in the late 1950s to 1991.

The Tomsk-7 accident occurred April 6 when a tank containing nuclear waste exploded, scattering radiation over a large area of Siberia.

The Japanese agency is planning to send a survey team to Tomsk 7 to study the accident to help it devise safety measures for Japan's nuclear reprocessing facility at Rokkasho, Aomori Prefecture.

THAILAND

Lead, Mercury Levels Concern Experts

93WN0405A Bangkok MATICHON in Thai 14 Apr 93
pp 1, 29

[Excerpts] [passage omitted] Dr. Luaphon Bunyakan, the deputy dean of the Faculty of Medicine, Sirirat Hospital, said that based on data of the Occupational Health Division, Department of Health, Ministry of Public Health, it has been found that the blood levels of lead, mercury, cadmium, and other heavy metals in Thais have risen sharply. One of the main reasons for this is that proper steps have not been taken to dispose of industrial waste.

Dr. Luaphon said that one thing that is quite clear is that each year, Thailand produces and uses approximately 320 million dry cell batteries. The question is, once these have been used, how are they disposed of? As far as he knows, they are disposed of in the rivers. Thus, these batteries leak mercury and other heavy metals, which causes many problems. In particular, aquatic animals ingest these metals and when people consume these aquatic animals, the metals enter their bodies. [passage omitted]

The deputy dean of the Faculty of Medicine, Sirirat Hospital, said that blood samples were taken from women who had recently given birth. It was found that

the level of mercury in their blood was about 2 micrograms per deciliter, which is a very dangerous level. However, if they do not take in more mercury, the level of mercury will remain the same. It will not increase. The fact that we have found such high levels of mercury in people should be a warning to those responsible that steps must be taken to ensure that industrial waste is disposed of properly.

Dr. Luaphon said that something must be done to solve this problem. Today, the industrial sector is growing. But there are no measures to deal with the problems. The hazardous waste is disposed of haphazardly along with non-hazardous waste. In other countries, ordinary waste is separated from hazardous waste.

In his capacity as an environmental adviser to the governor of Bangkok, Dr. Somphun Kruttalak, the former head of the Toxicology Department, Faculty of Medicine, Sirirat Hospital, said that people have been talking about the problem of mercury and lead for a long time. The government has tried to reduce the use of these heavy metals. For example, the use of unleaded gasoline and paints that do not contain mercury has been promoted. However, there are many sources of mercury besides batteries. Neon bulbs contain mercury vapor. Besides entering the body directly, this can also circulate through food. [passage omitted]

"Even though present levels do not pose a danger, the government should formulate a plan instead of just talking about how dangerous this is. I support using unleaded gasoline and moving those factories that use

lead out of the city, because that can build up. Taking preventive measures will help improve the situation," said Dr. Somphun. He added that the disposal of industrial waste in Thailand is something that he has given much thought to. If we really want to dispose of this waste, it will cost quite a lot. He said that he once recommended that the factories recycle the used batteries. In Japan, for example, after the "Minamata" epidemic, they became very careful about batteries. They crushed them and then compressed the gas. Instead of destroying the environment, they were able to recycle the mercury. Thais are afraid of the disposal of industrial waste. People in Ratburi, for example, have opposed this, because they don't know what is left or what effect it has on the body. They have refused to allow industrial waste to be buried there. Similarly, people in Kanchanaburi have opposed the disposal of hazardous substances from the port.

"In my view, no administration has ever used its budget funds correctly. The government has a lot of money, but it has not used it properly. The Bureau of the Budget has tried to stipulate how the money is to be used. It can be seen that at the end of the fiscal year, much money is spent on this and that, because each unit has to spend all the money allotted it," said the environmental adviser to the governor of Bangkok. He added that in the past, committees have been established to consider various projects. In many cases, units have put up money for a project and asked the committee for permission in principal. Actually, the committee should look into what should be done with the money available.

REGIONAL AFFAIRS

Safety of Nuclear Power Stations Assessed

93WP0142A Paris *LE MONDE* in French
21 Apr 93 pp 1, 13

[Article by Jean-Francois Augereau: "From Chernobyl to Tomsk"]

[Text] *Seven years after the catastrophe, almost nothing has been done to improve the safety of the former USSR's nuclear plants....*

"I don't want to play the prophet of doom, but I predict that this year there will be at least two or three accidents as serious as the one at Tomsk. The system is completely out of control." This was the somber prediction voiced by Alexei Yablokov, President Yeltsin's adviser for environmental affairs, in wake of the 6 April explosion of a vat of radioactive materials in the factory at the Tomsk (Siberia) military-industrial complex.

The accident does not seem to be as serious as Chernobyl, according to experts from the International Atomic Energy Agency (IAEA) in Vienna (Austria), but it does symbolize the decrepitude of certain installations and the lack of institutionalized safety awareness on the part of those who manage them. Seven years after the catastrophic explosion that destroyed reactor no. 4 at Ukraine's Chernobyl generating station—a tragic illustration of the dangers posed by Russian RBMK nuclear plants—conditions in Eastern Europe and the former USSR are largely unchanged.

Of course, there has been a measure of progress since the 26 April 1986 tragedy. Reunified Germany showed no hesitation in closing down the dilapidated reactors of the Greifswald generating station in former East Germany. Bulgaria is slowly and painfully working to rehabilitate its reactors at Kozlodv, which were in a state of advanced disrepair.

The Bulgarian power plant is getting assistance from EDF [French Electric Power Company] and from France's Institute for Nuclear Protection and Safety (IPSN), in collaboration with the German, Belgian, and British nuclear safety organs. The result: Section 2 of the Kozlodv plant, which many wanted to shut down, "is now in presentable shape and has been operating reasonably safely since it was restarted in late 1992," says Pierre Carlier, operations director for EDF nuclear facilities.

But the aid promised by western nations to improve conditions at generating stations in Eastern Europe and the former USSR¹ is trickling in very slowly, owing to bureaucratic disputes and divergent foreign policy strategies. As for more concrete offers of assistance, they are not always purely altruistic.

Five to Seven Years of Delays

Some still confuse commerce with assistance, "pretending to believe, a bit condescendingly, that we in the West

can waltz into these countries and solve everything with a snap of our fingers. That's utopian," says the French nuclear safety official. "What good is it to furnish earthquake protection systems for power plants without first conducting comprehensive plant safety studies? None, except that it offers industries the opportunity for some quick sales. It's absurd. Nothing can be accomplished without mutual trust on the part of the various participants and a detailed analysis of the situation, which is essential if we want to find out what really needs to be done for the installations and their management personnel." The governments of most East European countries and the new republics of the CIS [Commonwealth of Independent States] seem to accept these arguments. But many realize that goodwill alone is not enough, and time is working against them. "We want to draw up new safety standards for our plants," says Vladimir Alexandrovitch Ghugunov, chief of operational safety inspections in the Ukraine. "But five to seven years are needed to bring us up to western standards, and today we are still using Russian standards."

Thus, until "such time as things change, we must show that we, the safety regulatory agency, are capable of ensuring there are no accidents at our nuclear plants," says Georgyi Kopchinsky, deputy director of the brand-new Ukrainian State Committee for Nuclear Safety and Radiation Protection set up with assistance from France's Directorate of Nuclear Installation Safety (DSIN) and its German counterpart, GRS [Reactor Safety Company]. As one expert bluntly put it, the task amounts to "improving existing reactors and closing the ones in the most rotten condition."

Admittedly, conditions are not favorable, particularly in Russia, where apparatchiks from a bygone era deny they need anyone's help to effect the modifications needed for proper operation of their reactors. According to Mr. Kopchinsky, those bureaucrats, clinging to their certitudes, "are still dreaming of a time when there was so much fanfare and hype about the Soviet nuclear program that no one realized how primitive they were compared to Western nuclear installations."

The situation at the Chernobyl plant is hardly any better, and the accident that befell reactor no. 1 at the Sosnovy-Bor generating station near St. Petersburg in March 1992—a fuel rod² ruptured—speaks volumes about the weaknesses of the RBMK system, which has broken down before. As long ago as November 1975, and again in September 1982, Chernobyl's reactor no. 1 and a section of Sosnovy-Bor had experienced precursors of this type of incident. Ignalina-1 during its start-up tests and Chernobyl-4 in December 1983 also exhibited increases in reactivity that were not effectively controlled because of the long time—18 to 20 seconds—it took for the facility's control rods to operate.

Since Chernobyl, the rod mechanisms have been modified and lag-time reduced to 2.5 seconds. But these improvements to RBMK reactors "are only stop-gap

measures," says one expert, and someday serious decisions are going to have to be made. Perhaps, as was suggested in July 1992 by Jean Syrota, head of COGEMA [General Nuclear Materials Company], a serious plan will be launched to limit consumption of electric power, which could allow closure of the dangerous reactors to be accelerated without undermining the country's economy.

Waste Dump of Reactor 4

"In our opinion," says one Ukrainian official, "the RBMK's should be shut down in 1993 because it is no longer possible, for technical as well as financial reasons, to make them sufficiently safe." Everything will depend on how Parliament follows through on the nuclear moratorium. "As far as we at the safety regulatory agency are concerned," says Vladimir Ghugunov, "of the two reactors still operating at Chernobyl, it is absolutely essential to decommission reactor no. 1, which is still operating at 70 percent capacity. As for reactor no. 3, which is now operating at full capacity, it could be kept in operation (but should it?), as the operator would prefer, out to the year 2000, when two 1,000-megawatt [mW] pressurized-water VVER reactors now being built at Zaporozhe and Rovno go into service³. We should concentrate our main effort on reactors of that type, which are closer in design to western models." First of all on the older type, the 440-mW VVERs. "They're chunky, but they can be modernized at an acceptable cost." Next on the 1,000-mW VVERs, which meet much higher standards.

Even though the investment needed for the 440s is not enormous, the Ukrainians say that "the national economy is such that money is in short supply. Plant operators are devoting their meager resources to keeping reactors in service and are hardly prepared, given the questions raised by the moratorium, to plunge into new construction. Hence, it is a thorny problem, because when delays continue too long, qualified personnel quickly start to lose their skills."

Under these conditions, assistance from IPSN and its German counterpart, the GRS, is a good thing; among other things, it has led to the launching of a 66-million [French] franc study to generate a comprehensive analysis of the safety of reactors 1, 2, and 3 at the Rovno generating station. But this first step is just a drop in the bucket when one considers all the nuclear sites in the former USSR that need to be cleaned up and made safe.

Ukraine must also decide on the future of that most terrible of nuclear constructions, the "sarcophagus"—that gigantic block of grate-roofed concrete housing the still dangerous remains of Chernobyl reactor no. 4. There, slumbering deceptively, lie 64,000 cubic meters of radioactive material, 800 to 1,000 tons of radioactive water, 35 tons of core fragments, 135 tons of "lava" produced by the partial fusing of core, concrete, and steel, and 10 to 15 tons of fuel in the form of fine dust that penetrates everywhere and encumbers the countryside with monitoring and sampling operations.

In short, it is a waste dump and a headache for the Ukrainians who know that the partially-burned structures underneath the reactors are now supporting loads for which they were not designed. "Preservation and maintenance of the existing edifice," opines IPSN, "is thus not feasible over the medium term. Its useful life, intended at the time of construction to be 20 or 30 years, is now estimated to be, at most, 7 years, given differential subsidence in the support structures. Repairs are difficult, since the radioactive exposure rate can reach as high as 50 rems per hour on the roof (the maximum legally permissible dose of ionizing radiation to which workers can be exposed is 5 rems per year) and between 300 and 1,000 rems per hour in the main hall."

"The possibility of premature structural collapse," continues IPSN, "is being discussed with increasing frequency, especially a collapse precipitated by external insults of natural origin, even modest ones. Estimates have been made of the radioactive fallout in the event the sarcophagus should collapse. Fallout could present a significant health hazard within a 30-km 'exclusion radius' of the site where workers are employed on a year-round basis to maintain and operate sections 1 and 3 and to monitor section 4—to say nothing of the inhabitants of several villages whose reoccupation has been permitted by the authorities."

Twenty-Three Evacuated Villages

For all these reasons, the question of construction of a second sarcophagus—totally sealed, capable of imprisoning under its imposing concrete cope some 740 million billion becquerels of radioactivity from the destroyed reactor—is more important than ever. An international competition is under way to come up with a method to make sarcophagus no. 1 environmentally secure for the next hundred years and to design technologies for dismantlement, waste management, and burial of the fuel and radioactive material within.

The Ukrainians still have a lot of headaches in front of them. So do the Russians, who can scarcely paint themselves as paragons of virtue. They have shown little respect for the environment in their handling of chemical and nuclear materials, especially the latter.

One need only recall the nuclear accident at Cheliabinsk 40, which in September 1957 led to the explosion of a 160-cubic-meter vat of radioactive waste from the reprocessing of irradiated fuel for atomic bomb production. The result: 20 million curies spilled into the environment, 2 million more carried away by winds, 1,000 square kilometers of woods, lakes, and crops contaminated, 23 villages evacuated, and—more than 35 years later—levels of radioactive pollution that are still dangerously high in a 19,000-hectare area which IPSN proposes to decontaminate using botanical technology as part of the Ressac plan (see LE MONDE of 30 September 1992).

The accident has not even served as an object lesson for officials at Cheliabinsk. For decades now, they have

continued heedlessly to dump radioactive waste into a small nearby river, the Techa. The basin of the Ob river into which it flows was polluted all the way to the Arctic ocean, more than a thousand kilometers away! Even now its banks are off limits for a distance of 200 km (LE MONDE of 26 September 1990). One can only wonder what conditions prevail at other secret military-industrial complex centers of the former USSR, centers like Cheliabinsk which were involved—and still are—in fabrication of nuclear weapons. The recent Tomsk affair, the result of negligence, is scarcely reassuring. Especially since safety precautions at such installations quite often are under the control of the military and thus are subject to a certain amount of secrecy.

Footnotes

1. In July 1992, France and Germany proposed creating, under the aegis of the EBRD [European Bank for Reconstruction and Development], a special \$700-million fund to improve safety conditions in the countries of East Europe and the former USSR. This fund is open to all countries. France and Germany have each pledged to contribute 15 million ECU to it in 1993, as well as an equivalent amount over the next 2 years.

2. The RBMK reactor core consists of a graphite pile traversed by 1,700 tubes called "fuel rods" where the fuel elements are found. These are cooled by the water forced through them. Under the effect of ionizing radiation, the graphite eventually swells and deforms the fuel rods, which must be replaced regularly—a procedure which exposes workers to large doses of radiation. The rods in place at Chernobyl no. 3 must be replaced between 2000 and 2003, which explains why the operator favors keeping the installation in service until that time, unlikely though the prospect may be.

3. Six 1,000-mW VVERs were under construction at four sites in the Ukraine at the time of Chernobyl: one at Rovno; three at Khamelnitski; one at Zaporozhe, and one in South Ukraine. Construction could be resumed with little delay and completed quickly at the Zaporozhe and Rovno sites, though not at the other two sites.

Map Legend: "Zones of Radio-ecological Pollution in CIS"

Submarine reactors:

A. Barents Sea: Fragments of submarines: 2 reactors with fuel (1960-1970).

B. Barents Sea: 4 reactors with fuel (1960 to 1970)

C. Gulf of Zormya: Research reactor (1991) 11,000 gigabecquerels (billions of becquerels or GBq).

D. Barents Sea: 1,400 GBq barge

E. Gulf of Techeniya: 1 fuelless reactor (1967)

F. Gulf of Sivolky: 3 fuelless reactors (1967) Icebreaker "Lenin"

G. Sea of Kara: Barge with reactor and fuel (1972)

H. Gulf of Stepovov: Submarine: 2 reactors and fuel (1982)

I. Gulf of Abrosimov: 3 reactors and their fuel; 5 fuelless reactors (1965-1966)

J. Barents Sea: Nuclear submarine "Komsomolets"; Radioactive waste:

1. Gulf of Techeniya: 68,650 GBq (1982, 1988)

2. Gulf of Blagopolichiya: 42,150 GBq (1971, 1972, 1988)

3. Gulf of Neypokoyov: 136,000 GBq (1976, 1980, 1982-1984)

4. Gulf of Sivolky: 1,468,050 GBq (1964-1967, 1978)

5. Sea of Kara: 239,310 GBq (1964-1990)

6. Gulf of Stepovov: 210,350 GBq (1968, 1970, 1972, 1973, 1975)

7. Gulf of Abrosimov: 107,250 GBq (1974, 1977, 1980)

8. Kola Peninsula: 7,940 GBq

9. Barents Sea: 290,040 GBq

10. Barents Sea: 114,160 GBq

11. Barents Sea: 76,235 GBq

12. Varanger Fjord: 2,330 GBq

13. Sea of Pechora: Miscellaneous wastes.

Slovakia, Poland Sign Environmental Cooperation Agreement

*LD1604093493 Bratislava Rozhlasova Stanica
Slovensko Network in Slovak 0500 GMT 16 Apr 93*

[Text] Environment ministers of the Slovak Republic and Poland held talks in Stary Smokovec on 15 April. The subject of their meeting, which is to end today, is the two countries' joint course of action in the sphere of environmental protection. Pavol Sveton reports from the High Tatras.

[Sveton] Late in the night, Jozef Zlocha, environment minister of the Slovak Republic, and Zygmunt Hortmanowicz, minister of environmental protection of the Republic of Poland, signed a declaration on Slovak-Polish environmental cooperation.

They note in the declaration that they arrived at the conclusion that securing the ecological security of the two states' border and the elimination of mutual ecological threats are important elements of the two governments' policies. [passage omitted]

CZECH REPUBLIC**Environment, Crime Viewed as Most Pressing Problems**

*AU1904135493 Prague CTK in English
1729 GMT 16 Apr 93*

[Text] Prague April 16 (CTK)—The environment and crime are the most pressing problems in the Czech Republic, according to an opinion poll conducted March 9-25 by the Association For Independent Social Analysis (AISA).

Environmental problems are the most pressing for 23 percent of the respondents, up from 14 percent in November 1991, while crime is now the most pressing problem for 21 percent, up from 14 percent in 1991. Overall, 90 percent of Czechs feel that the environment is an important problem and 95 percent feel the same way about crime.

The number of those who thought that the economy was the most pressing problem dropped from 23 percent in 1991 to 16 percent, and the number of people mainly concerned about relations between the Czech Republic and Slovakia decreased from 11 percent in 1991 to almost nothing.

Problems concerning health care have become the most pressing for 11 percent of those polled, up from five percent in 1991, while 88 percent thought health care

problems were important. Currently, problems of education and culture are important for 61 percent of Czechs, compared to 53 percent in 1991.

The poll also found that a drop in apprehensions about social and economic developments in the Czech Republic has been accompanied by a shift in priorities. The number of Czechs who consider unemployment to be an important problem has dropped from 73 percent (in 1991) to 55 percent, and the number of people fearing a drop in living standards has fallen from 64 to 60 percent. Privatisation of state enterprises is now an important problem for 38 percent, down from 46 percent in 1991, and development of the private sector is an important problem for 46 percent, down from 55 percent.

Although the general importance of economic and social problems related to economic reform is declining among most citizens, those groups of people most affected by the reforms (manual labourers, young people, retirees, low income groups and entrepreneurs) were more likely to place importance on these problems.

Relatively few people—two percent—said that problems of the political system and democracy were the most pressing. University-educated people in management positions were more likely to find these problems important. And while only three percent of those polled found legal and judicial problems to be the most pressing, a full 77 percent thought they were important.

General political stability in the Czech Republic has decreased fears of non-democratic political developments (down to 38 percent from 50 percent in 1991), of the risk of a renewal of a totalitarian system (down from 47 to 37 percent), and of the inability of politicians to solve fundamental problems (down from 71 to 55 percent).

PARAGUAY

Rodriguez: Solution to Pilcomayo Issue To Be Found 'Soon'

*PY1704190993 Asuncion NOTICIAS in Spanish
16 Apr 93 p 13*

[By correspondents Celso Chavez, Mario Diaz, Oscar Jara, and Celso Aguilera in San Estanislao]

[Excerpt] President Andres Rodriguez asserted here yesterday that a satisfactory agreement over the Pilcomayo River will be signed with Argentina soon, thus avoiding the need to request OAS intervention. Rodriguez even mentioned that Foreign Minister Alexis Frutos Vaesken a few hours ago spoke to his Argentine counterpart Guido Di Tella and that they have already reached a basic understanding that will allow the signing of a document in which Argentina will agree to seal the canal after the river crests, something which usually happens in May.

When the president was asked what he thought about Di Tella's alleged statement that the Pilcomayo issue was a mere political maneuver used by Rodriguez due to the drop of popularity experienced by the Colorado Party presidential hopeful, he answered: "Did you hear him say that?"

Rodriguez then said that many things that are not true are published. He said: "At 1300 today (referring to yesterday, 15 April), I learned that Foreign Ministers Di Tella and Frutos Vaesken were discussing the issue and were reaching an agreement to sign a document."

He said he could not believe Di Tella would make such comments against him and reiterated that a solution "to that minor problem with Argentina" would be reached soon. [passage omitted]

[Asuncion Cerro Cora Sistema Nacional de Television Network in Spanish at 1600 GMT on 17 April during its regular newscast carries an approximately 2.5 minute interview with Paraguayan Foreign Minister Frutos Vaesken, who says: "we are moderately optimistic that we will be able to reach an agreement." After noting that a Paraguayan mission is travelling to Buenos Aires to continue negotiations on Monday, 19 April, and that the Paraguayan Government has not varied its position on the issue, he commented: "Despite everything, this problem—which greatly troubles us now—has its positive aspect: The opening of the canals has washed away a great part of the sediment, thus obstructing only 500 meters of the river instead of 8 to 9 kilometers, as in the past. This is a breath of hope that we have found the solution." "A solution to the diversion of the river by Argentina must be found. We are going to participate in the bilateral negotiations and if we are unable to find a solution through these channels then we will raise the issue with other organizations."]

Di Tella: Argentina Won't Close Pilcomayo River Diversion

*PY1704124793 Asuncion ULTIMA HORA in Spanish
16 Apr 93 p 13*

[Article by correspondent Dolores Oliveira]

[Text] Buenos Aires—Argentine Foreign Minister Guido Di Tella has told ULTIMA HORA that Argentina will not close the Pilcomayo River canal that diverts the water flow toward its territory, while other lower-level officials told this newspaper that the submission of a Paraguayan complaint to the OAS for the re-establishment of the old river course does not worry Argentina at all because third countries are not entitled to participate in this type of conflict.

Di Tella's remarks emerged simultaneously with the mission in Asuncion of Lieutenant General Antonio Martin Balza, chief of the Argentine Armed Forces General Staff, who presumably discussed the subject with high-ranking Paraguayan military officers.

According to the Argentine judgment, the Paraguayan complaint to the OAS will reportedly generate, at the most, a declaration against the Argentine position on the Pilcomayo issue. It could prompt retaliation by the other party against the intervention of third parties, and this would delay any effective decision. The lack of effectiveness of this resort undermines any concern regarding the strategy of the Argentine foreign policy, which remains normal, with no considerable change on this specific point.

Di Tella added that there is no intention to reach an "agreement with Paraguay to select an international mediator to diagnose the failure of the diversion, and in 60 days begin work to correct the course of the water."

He said: "Our suspicion is that the problem is not to close the Argentine canal but to open a deeper one on the Paraguayan side." He then said: "We do not want to steal the river from Paraguay, but as you know, elections will be held very soon in that country and this fact seems to make political leaders very nervous."

Other reports have emerged in lower levels of the Argentine Foreign Ministry that the government of President Andres Rodriguez is concerned about gaining the loyalty of the Stroessnerist areas of the Colorado Party to vote for ruling party candidate Juan Carlos Wasmosy, and for this reason they are making these signs of nationalism as a political concession.

The restlessness increased over the past few days, the sources added, because the polls began to show an increasing trend toward independent presidential candidate Guillermo Caballero Vargas, the political adversary threatening the electoral ambitions of the ruling party.

According to reports, two Paraguayan Foreign Ministry officials, Deputy Foreign Minister Marcos Martinez Mendieta and Foreign Relations Director General Jose

Maria Fernandez, this afternoon will make a quick visit to Buenos Aires to discuss the red-hot Pilcomayo River issue.

It was also learned that between Paraguayan Foreign Minister Alexis Frutos Vaesken and his Argentine counterpart, Guido di Tella, there is a verbal agreement not to

close the diversion of the Pilcomayo River and to contract the services of a foreign consulting company to arbitrate the conflict.

This issue gained more force in the local press after the cancelled meeting between Presidents Andres Rodriguez and Carlos Menem in the Yacyreta Dam area scheduled for last Tuesday, 13 April.

ALGERIA

Concern Over Lack of Environmental Policy

93WN0395A Algiers *EL WATAN* in French
8 Apr 93 p 24

[Article by Zineb Oubouchou: "Oued-Smar Dump: Dioxin in the Air"]

[Text] *In the absence of an environmental policy in our country, for many years extremely toxic waste has been dumped with and in the same conditions as household waste. Today these impermissible acts continue, unfortunately, to be performed secretly by certain private and public businesses, and the Oued-Smar dump illustrates quite well the serious consequences for the health of those people living near the site.*

This unregulated dump stretches over 40 hectares and each day receives some 1,600 tonnes of household waste and 2,000 tonnes of industrial waste. This dump, which is unique in the Algiers region, abides by no rules and is not subjected to any checks. Throughout the day, the residents of this spot breathe in its sickening odors, the consequences of which are the large number of cases of respiratory complications.

An international expert evaluation carried out recently at this site revealed emissions of dioxin (a highly toxic chemical element whose presence, no matter how weak, is considered to be a potential danger) on the order of 75 grams annually.

From its opening in 1978 till today, this represents 900 grams, or approximately 50 percent of the level of dioxin emitted at the time of the Seveso chemical products factory, which was considered to be one of the biggest ecological catastrophes of the century. According to this expert report, the effects of these emissions will not be long in turning up, and the state will be confronted with the problem of decontamination, which will cost it, it needs to be acknowledged, very dearly.

Environmental protection has never benefited from a lasting interest that would ensure it a real working basis. Very often it has been only a subsector linked to the ministries of agriculture, hydraulics, or the interior. The experience [of having] a state secretary has only been a brief one. The failure of missions by specialists in the field seems to relate to the confusion of roles and prerogatives between the very numerous official players. The technical services of the People's Communal Assemblies [APC] of the wilayas and the ministries rub shoulders in the same sector while not, however, coordinating their missions.

The same specialists say they have been disappointed by the follow-up given to the conclusions of their reports. Those in charge of the Territorial Development Fund [CADAT] as well seem to lose hope, since the standards for maximum concentrations of residual water in industrial zones, which they established, have never been

officially recognized by the government and thus no sanctions can be taken against businesses that pollute.

On a daily basis the Reghaia marsh continues to receive some 20,000 m³ of liquid waste and more than 7,000 m³ of used water.

If the "burial" method is the only one that has been used thus far at these sites, and limits the spread of the pollution in the air, it is nevertheless true that rain water that seeps through the layer of waste ends up leaving contaminated and thus spreading into the environment. We should point out that work to decontaminate the public dump in Lekkerkerk in the Netherlands cost more than \$60 million, not counting expenses due to the evacuation of 870 people.

The potential risks linked to methods to eliminate toxic waste are great. If we continue to move in this direction, we risk compromising natural resources and leaving a poisoned inheritance to our children. The sooner something is done about waste, the smaller the bill will be to repair the damage when that is possible.

INDIA

World Record in Afforestation Achieved

93WN0404 New Delhi *PATRIOT* in English
1 Apr 93 p 5

[Text] India has achieved a world record in afforestation of two million hectares in a year, Environment and Forest Minister Kamal Nath told the Rajya Sabha on Wednesday, reports UNI.

He said this was confirmed by the non-government and voluntary organisations.

The minister said Rs 4082 crore have been allocated in the eighth five year Plan for the afforestation programme. This amount could meet the requirement of only one thirds of the massive afforestation drive.

He said incentives were being offered to various factories, plants and groups to promote substitutes for timber. But despite this the demand for timber continued.

On illegal felling of trees in Bastar region, the minister said tough action would be taken against encroachers. A centrally sponsored social forestry scheme was being implemented in 190 fuelwood deficit district in the country, he added.

Kamal Nath said that Japan has extended assistance to India under the Overseas Economic Cooperation Fund (OECF) for projects relating to afforestation and pasture development along the Indira Gandhi Canal to the tune of yen 7869 million and the afforestation project for the Aravali Hills in Rajasthan State to the tune of yen 8095 million. In addition, assistance is pledged for the Yamuna Action Plan to the tune of yen 17.77 billion.

Committee Appointed To Study Nuclear Plant Fire
93WN0402A Hyderabad DECCAN CHRONICLE
in English 6 Apr 93 p 9

[Text] Bombay, April 5 (PTI & UNI)—Another committee has been appointed to go into the cause of the fire which broke out at the Narora Atomic Power Station (NAPS) on March 31, according [to] the chairman of the Atomic Energy Commission (AEC), Dr R. Chidambaram.

Dr Chidambaram told reporters the fire was "unusual" because of its magnitude and location which was noticed to be below the turbogenerator—a very unlikely spot.

He said the fire had no impact on the nuclear reactor nor was there any radiation-related hazard or injury to any of the staff as the plant had been promptly shut down safely—ensuring integrity of the fuel and avoiding radioactivity release.

The fire had been confined to the turbogenerator, which lay 20-25 metres away from the nuclear reactor. Besides, the reactor itself was surrounded by prefabricated double-containment walls that "ensured no release of radiation under any circumstances," he added.

The turbogenerator system had been working well for the past three months and the unit had been due for its annual shutdown.

The committee has been set up under the chairmanship of Dr L.G.K. Murthy, Director, Health and Safety, Nuclear Power Corporation.

An emergency control room had been set up in Bombay to maintain minute-to-minute contact with the nuclear station at Narora, with the AEC Chairman and members of the crisis management group closely monitoring the situation.

Dr Chidambaram said the fire had caused extensive damage to the Rs 25-crore generator, turbine, cables, excitation panel and internal wiring of some electrical panels.

"We intend to make certain improvements in the fire prevention and safety side of nuclear plants functioning," he said.

Regarding the emergency classifications, Dr Chidambaram said the Narora incident was between one-and-three which was the "incident" level, and did not fall in the three-to-seven level, which was an "accident" level like the Chernobyl disaster. Similar incidents had also happened in the past in countries like Spain and the United States, he said.

Dr Chidambaram said it was necessary to highlight the fact that a nuclear power station consisted of two distinct and separate sections.

The nuclear island consists of the nuclear reactor which produces heat from nuclear reaction and is used to generate steam.

This steam is then led to the second section where it is utilised to produce electricity through turbogenerators. These generators are located in a separate building well away from the reactor building. The turbogenerators are similar to those used in conventional thermal power stations in their layout and protection systems.

Relating the sequence of happenings during the fire incident, the Managing Director of the Nuclear Power Corporation (NPC), Mr S.K. Chatterjee, said that at 3.31 am on March 31, the control room operating staff at the NAPS heard an explosive sound from the turbine hall of Unit-I. They observed from the panel that the turbogenerator had tripped on its own protection. They also noticed that fire had broken out from the generator.

The shift engineer tripped the reactor immediately by activating the primary fast acting shutdown system. They also initiated the fast cooling of the primary system. The second fast acting shutdown system also triggered automatically.

Apathy Blamed for Darjeeling's Environmental Destruction

93WN0409A Calcutta THE STATESMAN in English
26 Apr 93 pp 1, 9

[Article by Marcus Dam: "Taking Nature for Granted"]

[Text] Suddenly Nature's expression in the hills seems to have changed—the new look is scarred and wasted. The thick forests have been pushed towards the mountain ridges, the barren slopes dotted with the stumps of recently felled trees.

The lure of easy lucre, sprouting of human settlements and new pathways carved on the hill-face have all conspired, perhaps unwittingly, to destroy the local ecosystem that threatens to boomerang as Nature prepares to gather its wits.

Like almost everything else, this hill-town has metamorphosed into a sprawling colony of incongruous structures splattered over the hills in a wild bid to accommodate a population unwilling to lose time over environmental concerns. But even an otherwise patient Nature, stretched too far, throws vengeful tantrums.

Amid this, the spectre of an acute water crisis looms large over a population used by now to buying their supplies at a premium. Senchal Lake, the town's primary source of water, is sucked dry as the destruction of the surrounding woods plays havoc with the local rainfall. Landslides occur in places disturbingly close to the heart of the town—areas so long considered safe and hence gobbled up by avaricious realtors.

Given the apathy of the local authorities, obsessed with exigencies of a more political nature, one has few places

to turn to for an explanation of the rapid degradation of the local environment. Experts say that there has been no assessment of land capability for several years now, neither has there been an official survey to determine what percentage of land should be under forest cover to ensure adequate rainfall for sufficient water supply.

According to Mr Anish Chattopadhyay, an expert on local environment, the approach of the State's Hill Development Council towards the scourge has been piecemeal. The privately sponsored Indian Institute of Hill Economy has become "virtually redundant" for the past three years.

Mr Chattopadhyay points out two reasons for the alarmingly frequency of land slips in the town area.

First, the geometry of the hill slope is altered irrevocably owing to dents on the mountain-face, caused while constructing roads. Even the arterial Hill Cart Road, a handiwork of the Raj, is culpable, he said. Secondly, indiscriminate digging of concrete plinths deep into the slopes result in the excavation of earth which is displaced elsewhere, leading to disturbances in the equilibrium. According to him, while constructing houses, the safety angle is seldom ascertained.

Studies indicate that the haphazard construction of roads, buildings and sewage channels in the hill town have impeded the natural drainage system down the slopes, accelerating a process leading to landslides.

In the plan for the Darjeeling area formulated by experts in the mid-1980s, it was determined that about 69 per cent of the residents in Pulbazar block lived in areas susceptible to landslides. A large number of villages in the Mirik, Rangli-Rangliot and Gorubathan areas of the district were also prone to such disasters.

Though the local authorities are quick to arrest landslides when they do occur, little has been done to prevent their recurrence, sources say. There have been no attempts to determine the safety angle for new houses or land-capability assessments, it is alleged.

Moreover, the introduction of Cryptomeria trees instead of birch has inflicted changes on tuft vegetation along the hill slopes, experts say. A dangerous trend, as the absence of carpet vegetation ensures additional percolation of water and greater sub-soil water flow. This, in turn, greases the thin veneer of soil to glide downslope, increasing environmental hazards in areas such as Birch Hill, Batasi-Maneybhanjan and parts of Kalimpong and Kurseong.

Where Nature provides, there appear few takers. Elsewhere, it suffers indignities only humans are capable of inflicting.

ISRAEL

Fish Ponds Being Exploited by Predatory Pelicans

93WN0389B Tel Aviv HA'ARETZ in Hebrew
31 Mar 93 p B2

[Article by Tzafrir Rinat]

[Text] Israel's fish farm industry faces a genuine threat to its existence—now that it has become a source of food sought out by flocks of cormorants and pelicans that loiter over Israel in spring and fall. So representatives of the fish growers' association told the Ministry of Agriculture and nature protection organizations at a special press conference. They reported losses growing at a dizzying rate.

According to Gidi Sivan, secretary of the fish growers' association, a large portion of the 100,000 pelicans that roam Israel's skies land in fish ponds. Members of the association estimate that they have lost 800 tons of fish this year, which is about 5 percent of their yearly production. The growers assess their direct losses at 8 million NIS [new Israeli shekels].

Fish ponds in Israel, most of them kibbutz-owned, cover 28,000 dunams of land. This is the greatest concentration of fish in so small an area, a fact that the birds have learned to exploit, says Sivan. The birds prolong their stay in Israel, with the pelicans eating the largest fish and the cormorants completing the damage by consuming the smallest. "It is clear to us that there is a connection between the industry's increased production in the past decade and the higher numbers of pelicans stopping in Israel."

Pelicans are considered the most sophisticated predators among waterfowl. They do not dive after fish but land heavily on the surface and travel in formation towards shallow waters. After encircling the fish, they poke their bills, which are topped by a membrane resembling a large pouch, into the water and scoop up the fish. The cormorants dive in their hunt for fish.

Yo'av Horin, the fish growers' representative in the Galilee, also attributes the damage that the pelicans are causing to the sophistication and resourcefulness they have developed in the face of the tactics employed to evict them from the ponds. "Without a doubt, these birds learn," he says. "They've done things that the scientists couldn't believe they did, like feeding at night. When we shooed them away during the day, they came back to fish at night. When we tried to prevent them from landing in the ponds by spreading nets, they landed on the causeways next to the ponds. When we tried to scare them away, they just moved off and came back later."

The fish growers' anger is aroused by defense of the birds' rights as a protected asset of nature. "In every branch of agriculture, scientists mobilize to protect

farmers from pests. With us, all the scientists are ganging up to protect what we call a 'protected blight of nature,'" says Sivan.

People are closing their eyes, he says, to the changes in the pelicans' migration habits because of the abundance of fish available to them. The scale of losses continues to increase.

The preferred solution for the growers is permission to shoot some of the pelicans visiting the ponds—which is currently prohibited. "The pelican is a bird capable of learning. If we shoot some of them in a given place, the flock will understand that it's a dangerous spot and leave the area," says Horin. "We also have to put constant pressure on them to move them from their roosting spots."

At the Nature Reserves Authority and the Society for the Protection of Nature, officials recognize that the growers have a problem but do not agree with some of the facts they present. Ayal Shai, director of the Nature Reserves Authority's Wild Animal Protection Division, and Yosi Leshem, director general of the Society for the Protection of Nature, note that one of the principal causes for the increased numbers of pelicans is the improvement in protecting them in their nesting areas in Europe. "The great majority of pelicans pass through Israel for just one day," says Leshem. "Some flocks remain for two weeks and there are another 2,000 to 3,000 pelicans that stay all winter. They're causing most of the damage."

Leshem and Shai agree that the pelicans have developed methods for contending with the deterrence tactics employed against them. "It's no surprise that they come at night," says Leshem. "It's known that, at times of stress, if they can't eat during the day, they'll come to eat at night."

Shai opposes hunting as a form of deterrence. "There have been instances in which growers illegally shot pelicans and the birds kept coming anyway. Twenty pelicans were electrocuted once next to a pond and other pelicans still continued to come. If we thought that controlled hunting would solve the problem, we'd agree to it. Look, we agreed to shoot some pelicans as part of a study that's supposed to track them." According to Leshem, the fish growers have in mind more than a controlled and limited hunt. "I've heard Gidi Sivan cite a figure of 20,000 pelicans that have to be shot."

Nature Reserves Authority officials cannot thin out the pelicans the way they have deer that multiplied and caused damage for farmers. It isn't just that shooting is of doubtful practical value. As migrating creatures, pelicans are protected by an international compact to which Israel is a signatory. Although their numbers have risen in recent years, they are still considered an endangered species. "I've received letters from three international organizations that have heard there's a possibility we're going to shoot pelicans," says Leshem. "They've told me they'll fight Israel to the bitter end."

The fish growers must cooperate in a secret study that will provide a clear picture of the dimensions of the harm that the pelicans are causing and their behavior while they are in Israel, Shai and Leshem say. The Nature Reserves Authority has already begun such a study. "We need resources to fund it, and the fish growers have to take part because elimination of the pelicans is not a subject for discussion," says Shai. In the meantime, he says, techniques for moving and frightening the pelicans, such as gas cannons and shooting in the air, must be continued. "The growers haven't fully exploited these techniques. Some places have been successful in driving pelicans from their ponds, but the pelicans then went to other ponds where these measures weren't used."

For their part, the growers say that they're sick of study proposals and that the Reserves Authority and the Ministry of Agriculture have to recognize their responsibility to prevent losses and stop placing that burden on the growers. They have also angrily rejected a study proposed by the Society for the Protection of Nature, which Leshem prepared. They contend that Leshem suggested that they make changes in the way the industry operates, such as abandoning aquaculture areas and suspending production while the birds are in Israel, which would be very costly.

Leshem denies suggesting such changes. "I recommended that they create some ponds, which they could do in a part of the Hula Valley that will soon be flooded again, fill them with defective fish or fish that aren't fit for sale at the market, and send the birds there. We're willing to pitch in by sending our volunteers to help them get rid of the pelicans." In Leshem's view, it is also possible to set up wooden models of pelicans in the substitute ponds. The pelicans will think that the models are birds that have found fish and turn towards these ponds.

He also contends that the growers have not made sufficient use of existing techniques for driving the pelicans away and keeping them out. "They used some ultralight planes, which is definitely not enough. There are other means, such as installing cross-weave wires, which will cut down the surface area for landing. The pelicans are like Boeing airplanes," he says. "Because of their weight, they need a runway 15 meters long to land. If they see the wires, they won't land."

The fish growers brought their complaints against the nature protection organizations to the Minister of Agriculture, whose department is responsible for the Nature Reserves Authority and the fish growing division. They met this week with the minister and the director general of the Nature Reserves Authority, Dan Peri, who agreed to reach a decision within one month on how to reduce losses to birds. "The Authority and the Ministry agreed with us that we have suffered heavy losses and that the responsibility for preventing them falls not only on us but on them as well," says Sivan. "They also agreed to look into the possibility of a controlled hunt."

Sarid Rejects Egyptian Concern About Radioactive Waste

TA1604081793 Jerusalem *Qol Yisra'el* in Hebrew
0700 GMT 16 Apr 93

[Text] Environment Minister Yosi Sarid has dismissed Egypt's concern regarding Israel's disposal of radioactive waste in the Negev. Sarid told our correspondent Shulamit Schmerling that radioactive waste has never been disposed of anywhere other than the site designed for that purpose at the Nuclear Research Center in Dimona. Our correspondent recalls that concern about radiation close to the Israeli-Egyptian border cropped up following a hitch last summer when radioactive waste water was spilled into a ravine in Hamakhtesh Haqatan. All the tests carried out since then show no radiation.

Need To Open Dimona Reactor After Leakage

93WN0389A Tel Aviv *HA'ARETZ* in Hebrew
16 Apr 93 p B5

[Article by Dany Rabinowitz]

[Text] The incident at the "Tomsaq-7" nuclear reactor last week began with a mishandling at the radioactive waste dump. It serves as another reminder of a troublesome subject known as the "problem that refuses to go away." Whether one is speaking about a military nuclear installation or its civilian sisters, the central process of a nuclear reactor in the core consumes bars of uranium. Some of the original uranium is converted to plutonium, an element that emits deadly radiation for thousands of years, although not to the extent that it could be called the lord of Hell. Another portion of the uranium changes into other radioactive materials for which the world of technology has yet to devise a sound method of disposal. This is a worldwide problem and, according to reports, Israel is no exception.

Besides that, in recent months the Israeli nuclear industry has found itself in a situation somewhat reminiscent of that besetting the General Security Services after the Bus No. 300 incident. From a sacred tabu that could not be mentioned, this problematic sphere of activity has become everyday grist for the media's mill. Still more is unseen than has been revealed, but it seems that the unholy alliance between the Atomic Energy Commission's aversion to releasing information and the public's lack of interest in knowing is alive and well.

The subject of Israel's dangerous nuclear waste and storage of it is a good example of this symbiosis. The mayor of Dimona has already publicly expressed resentment that he knows nothing of how nuclear waste is stored at an installation near his city. David Ben-Litai, the chairman of the Nuclear Safety Commission (NSC) who was interviewed last February during a television program on the environment, agreed to consider locating Israel's nuclear waste dumps in the Nuclear Research Center (NRC) in Dimona—but did so in vague pronouncements lacking in specific details. At the end of

March, the NRC in Dimona received a visit from the Minister of Environmental Protection, Yosi Sarid, who publicly announced his willingness to accept personal responsibility for dealing with the subject of nuclear waste. Upon returning from his visit, he told the media that, so far as he was concerned, the Dimona waste facility is operating properly. Nonetheless, he too did not disclose any technical details relating to handling of the nuclear waste.

A close factual examination of what now happens at the site, particularly concerning nuclear waste, cannot escape the weight of the past. The sole source of specific technical data on the subject continues to be Mordekhay Vanunu. Vanunu, who worked at the NRC, spilled what he knew to London's *SUNDAY TIMES*. At the newspaper's request, Vanunu spent four weeks in the autumn of 1986 telling all. The team that studied his allegations included reporters and nuclear experts, who came to the conclusion that the information that he had supplied was reliable. The *SUNDAY TIMES* then carried the story on 5 October 1986. A Hebrew version appeared in *HA'ARETZ* the following day.

One of the central figures of the investigation team was Dr. Frank Barnaby, a British nuclear physicist, who some time ago finished a term of employment at the Swedish Institute for Peace Studies, which, among other things, monitors the proliferation of nuclear weapons around the world. On the basis of the information supplied by Vanunu, only part of which was printed in the *SUNDAY TIMES* article, Barnaby published a book in 1989 about Israel's nuclear industry called *The Invisible Bomb*. The first section of the book, particularly Chapter 3, is today the most detailed source about the NRC's operations in Dimona, including the environmental issue and the waste problem. *Nuclear Obscurity—the Vanunu Affair*, a new book published in London in 1992 by Dr. Yo'el Cohen of Jerusalem's Davis Institute, also relies on information made public in the wake of the Vanunu affair as the basis for critical study and comparisons with the general picture.

Vanunu, like Barnaby and his readers, was not especially occupied with the environmental issue. By the nature of things, the information Barnaby presented regarding environmental problems is fragmentary; it may also be inaccurate. For all that, against the background of the recalcitrance of officials of the NRC and the Atomic Energy Commission to release details, this information remains, at this point, the sole factual basis by which it is possible to examine the environmental aspects of the NRC's norms for operations and storage. The picture that emerges is not encouraging.

First, the reactor itself is located at Institute No. 1. According to Barnaby's book, the original reactor at Institute No. 1, which had a capacity of 26 megawatts [MW] (the measure of the supply of heat generated in the core), was built by the French and gas cooled. To prevent overheating, which could lead to a fission explosion, carbon dioxide pipes were inserted into the core to

absorb and divert the immense heat produced inside. In the 1970's, however, Barnaby claims, Israel succeeded in boosting the production capacity of the reactor, at first to 70 MW and later to 150. This was an impressive feat of engineering, performed without the need to destroy the reactor and build another below it. The changes involved a number of features; for environmental purposes, what was important about them was the change in the method of cooling, from gas to heavy water, which enabled increased production of plutonium from a similar quantity of uranium by accelerating the fission process.

There was an environmental price for this change. Cooling with heavy water, Barnaby contends, requires bringing the water into direct contact with the uranium rods in the core, in other words, with the most dangerous source of radiation. The result: the core ceaselessly produces an uninterrupted stream of the most highly radioactive liquid. The question, on which no reliable data currently exist, is, what becomes of the coolant liquid after its discharge from the core? According to Barnaby, it seems that it undergoes some purification, apparently in what is known as Institute No. 2, so it can be used again and again to cool the core. But what happens to the waste produced during this purification?

A second locus of environmental problems is Institute No. 2 itself, described in the literature and the SUNDAY TIMES report as the pancreas of the NRC nuclear complex. Nuclear warfare agents depend on plutonium, an element that does not exist in nature. To produce it, uranium must go through a nuclear reaction in the reactor core, during which some of its mass is converted to plutonium. The problem from then on is separation of the plutonium from the rest of the material. The separation process at the NRC, according to Barnaby, is based on melting used uranium rods and gradually returning the liquid to a solid state while discarding the material not needed in the final product-plutonium. All this, Barnaby claims, occurs in the underground production chambers of Institute No. 2 in Dimona. The liquid, in which some of the used uranium is melted after discharge from the reactor, and which emits up to 2,000 curies of radiation (a lethal dose)—Barnaby reports—is transferred to Institute No. 2, where it is introduced over the course of four years into a 6,500 liter vat. During that time, some of the radiation is released while generating a great deal of heat.

To prevent overheating and a disaster, the liquid must be frequently diluted in fresh water, and hot radioactive gas vented into the atmosphere. As Barnaby states in his book, "(Institute No. 2) routinely releases air pollution and radioactive gases into the atmosphere. Ever present winds carry these materials towards the Jordanian border, some 40 km east of Dimona. According to Vanunu in the SUNDAY TIMES, there is also occasionally an emission of especially poisonous gases from the Dimona facilities. These emissions, however, are precisely controlled and occur only when the Israeli Meteorological Service confirms that the winds indeed are blowing towards Jordan!"

According to Barnaby, the plutonium components—the final product of the process—are held at least for some time in cellars at Institute No. 2. Cohen writes in his book that Western nuclear experts mentioned in the SUNDAY TIMES and Barnaby's book have expressed amazement at the unnecessary risk inherent in such storage right in the bowels of the central production chambers.

The third site that arouses concern over the level of environmental safety at the NRC in Dimona is Institute No. 4, where nuclear waste is treated. Barnaby claims that this is Israel's national radioactive depot. That is where both nuclear waste produced at the NRC, including the residue from conversion to plutonium, and radioactive materials brought in from outside the NRC, are transferred.

The most significant distinction here is between high-level radioactive waste, such as most of the material originating at the NRC, and the low-level radioactive matter arriving from some 300 medical and industrial sites around the country, some of them government-run, others private, which includes industrial and medical waste such as test tubes, packing boxes, clothing, work outfits, syringes, and so forth.

The impression created for anyone who recently has followed assertions, as reported in the media, of members of the Atomic Energy Commission, including members of the nuclear safety division, is that when they speak about "nuclear waste," it is convenient for them to speak only of low-level waste. It is difficult to entice from them, however, any reply to the claims published abroad dealing with high-level radioactive waste, which is 10 times more dangerous. This situation derives, among other causes, from the fact that the subject intimately involves the production processes of plutonium. It also arises because these processes create an environmental problem much more serious and significant than the types of problems for which any foolproof solution has yet been found anywhere in the world. Clearly, citing storing of nuclear waste at the NRC, without taking up the issue of high-level radioactive waste, as the press reports contend, misleads and confuses the public. This situation resembles that of a man who develops cancer but conceals it from his friends, who know only that he, like everyone else, sometimes catches a cold, and when they ask how he is, he says, "I'm as strong as an ox. I haven't sneezed in two weeks."

The essential information supplied by Barnaby's book is that Institute No. 4 is used to store high-level radioactive waste in liquid form in vats, apparently for permanent keeping. If that is true, this is, to put it mildly, a problematic matter. It is now customary in the West to convert accumulated materials of similar radioactive levels to a glass-like state and bury them in deep shafts, preferably in natural salt formations that seal the space over the years and do not allow the containers to move, which could cause leakage into the earth and, eventually, into subterranean waters and the environment. This

practice, of course, also raises the question, who, and how often, checks up on the NRC and the area around it for levels of radioactivity in the ground and air, and where do these reports go?

A further question raised by Barnaby's book relates to the type of containers in which liquid is stored at Institute No. 4. We know, for example, that American standards are far stricter than those in Europe (which will be tightened in coming years). Does Israel follow the American or the European standard?

Despite differences in severity and risk between it and high-level radioactive waste, low-level waste cannot be taken lightly. First of all, there is the question of transporting these materials to the NRC from the rest of Israel. Are the forms of transport fit for this? What routes do they take? When are they moved? What other practices does this involve? How are traffic jams avoided? In the United States, to give an example, a satellite tracks the progress of these special trucks on the roads to prevent traffic accidents and avert a calamity.

As to storage itself, the practice used at the NRC, according to Barnaby, is that low-level radioactive waste is placed in Institute No. 4 in barrels sealed with tar and taken out to a burial site located about 1 km from the reactor zone. Nothing is known of the engineering specifications of the burial site, or of routine monitoring inspections in this burial zone, or of the results of testing for radiation damage to the environment, living creatures, vegetation or people. Rumors already circulated in the media, admittedly untested and unconfirmed by any recognized scientific authority, tell of at least two doctoral theses—one in botany and the other in zoology—revealing anomalies in different populations around the NRC and attributing them to radioactive emissions.

Minister Sarid, whose visit to the NRC and the cooperation he has obtained from area factories have been done on the authority of the prime minister and with his encouragement, accomplished at least one thing during his visit. The results of all monitoring done around the NRC will be open from now on to the staff of the Ministry of Environmental Protection even though, for the time being, they will not be the ones who perform the tests. Sarid believes that the NRC staff understands the importance of oversight by an independent, civilian branch eager for their cooperation.

This is all fine and good. But until the public knows the procedures, the practices and the engineering and environmental criteria by which waste is stored at the NRC, vague and reassuring gestures by the officials in charge—including the Minister of Environmental Protection—will not be enough to banish fears about the NRC aroused by the critical environment call heard from the foreign literature.

Beersheba Response to Environmental Demands
93WN0389C Tel Aviv *HA'ARETZ* in Hebrew 20 Apr 93
p B4

[Text] The capital of the Negev, which until two or three years ago was portrayed as a city in which more people left than stayed, has been transformed by waves of immigration from the Commonwealth of Independent States and Ethiopia. The demographic balance points to an increase in the number of residents.

From an environmental perspective, by contrast, Beersheba has not succeeded in maintaining even the low standard of quality it had years ago. Recent years have seen a regression in most categories.

Whatever his route, the visitor to Beersheba is almost unable to avoid the unappetizing sight of a filthy approach surrounded by junked cars and construction debris.

The state of cleanliness in the city itself is also offensive. The main environmental problem, which the local agency has been unable to overcome, is sewage treatment. The two existing purification facilities in the city were built 10 years ago and designed for a population half of what it is today. It is only natural that the facilities are inadequate for treating all the city's sewage. This situation results in recurring breakdowns, breaks in feeder lines, and overflowing of the purification facilities.

What all this leads to is that the sewage makes its way along the Negev's river beds, Nahal Basor, Nahal Beersheba, and Nahal Patish, producing a mighty river of sewage that flows beyond the horizon. The river also generates bothersome mosquitoes, foul stenches, and underground contamination.

Despite all the warnings issued by the environmental, health, and interior agencies, no practical, essential solution is in sight. True, they have begun formulating a master plan for the orderly disposal of Beersheba's sewage, but when they translate that into the financial costs that the matter entails, there still seems to be no practical solution to this acute problem.

What is more, a legislative amendment takes effect in November, addressing the improvement needed from all the local authorities respecting the quality of the sewage they produce. It is perfectly clear in Beersheba that the municipality will be unable to meet the new legal standards both in the period specified and in the period after that.

The second most serious problem is related to sewage disposal. Beersheba operates a transfer station that it built without first obtaining the required legal permits. The station is located near the city's southern exit, a placement that has provoked astonishment. It is close to one of the most important historic sites, the beautiful Turkish bridge across Nahal Beersheba.

In its current method of operation, the transfer station is causing such environmental problems that the Environmental Protection Ministry has been forced in recent months to issue an order for removal of a nuisance on the grounds of public health. It is expected that the order will be followed by preparation of an investigatory file what will present a recommendation to state prosecutors to begin proceedings against the municipality and its officials.

The problem of hazardous materials shipped through Beersheba, which constitutes a environmental potential disaster, has not yet been satisfactorily solved. True, improvements have been made in and around the train station, the point where the hazardous materials are transshipped, but a more fundamental solution is required. The hazardous materials terminal must be shifted outside the city to a location far from suburban housing. The plan is to move the terminal to the chemical industry zone in Ramat Hovev.

A ray of light in this dismal picture is the comprehensive improvement made in industrial factory operations. The

Bromide Compounds plant recently moved most of his industrial operations to Ramat Hovev where, pursuant to its obligations, it is supposed to transfer all its polluting industrial operations by July. In the past, Bromide Compounds was one of Beersheba's two main sources of industrial pollution.

The second factory, Beersheba Craters, won the environmental quality prize last year. The plant, which was a source of industrial pollution in the past and the target of many complaints from residents for whom it was a nuisance, has utterly changed its character. Its facilities are operated today according to restrictions imposed by various agencies. It has invested considerable resources to meet these environmental and public health regulations.

This process is still going on. It includes dealing with problems that other industries around the world are struggling to overcome. What are the technologies needed to satisfy strict environmental regulations? Anyone who remembers the difficult years of the battle with Beersheba Craters cannot but be impressed now with the changes made here.

REGIONAL AFFAIRS

Russia Seeks To Ensure Nuclear Safety in Former USSR

93WN0406A Moscow KOMMERSANT-DAILY
in Russian 23 Apr 93 p 9

[Article by Pavel Popov: "Russia Will Ensure Nuclear Safety of Its Neighbors"]

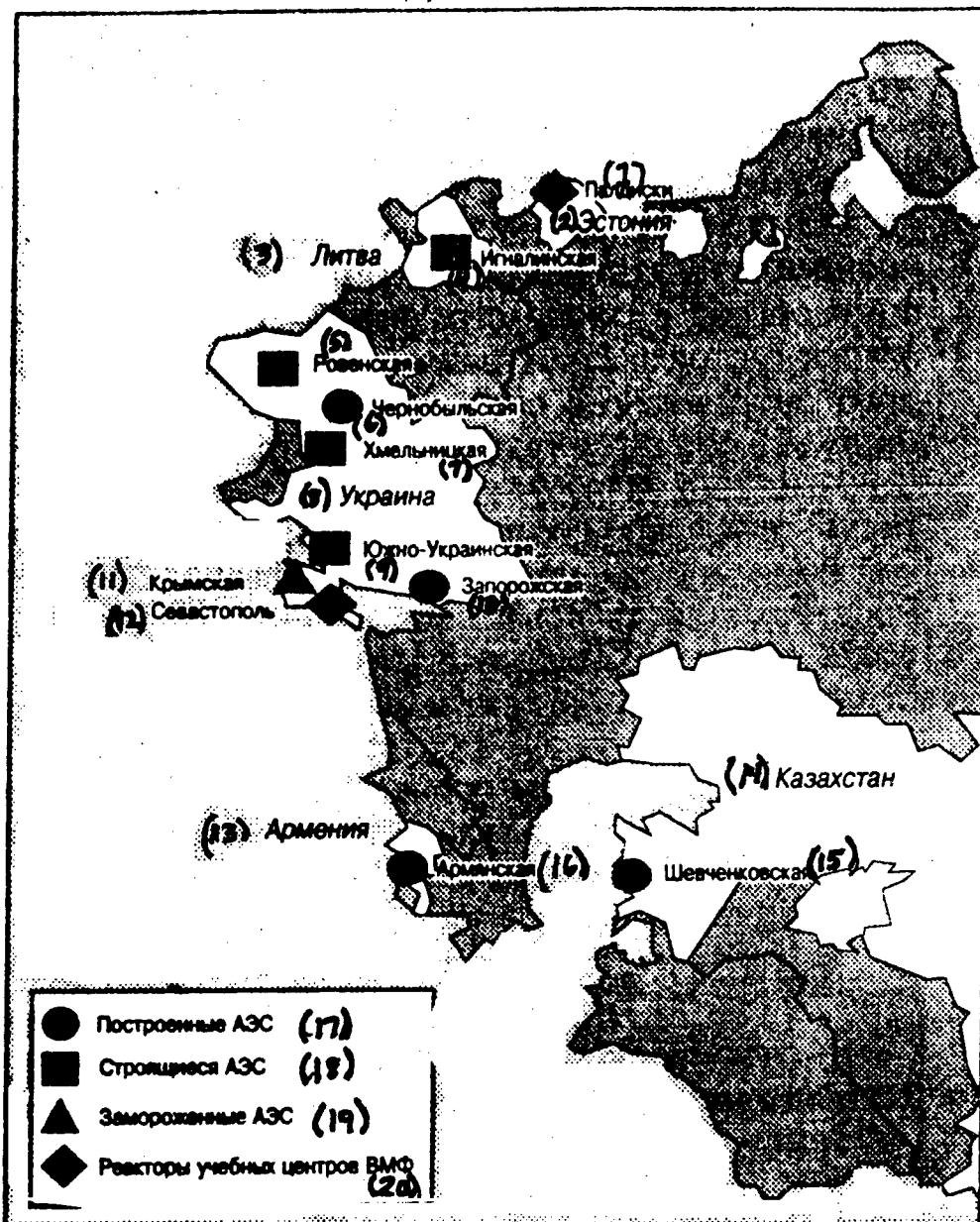
[Text] *The role of the nuclear power plant in Russia's overall energy balance continues to grow, but the country's leaders are concerned not so much about Russian nuclear energy itself as about nuclear power plants that have ended up under the jurisdiction of states of the former USSR. The main problem disturbing Russian authorities (like, incidentally, their Western colleagues as well) is providing for the safe operation of nuclear power plants on the territory of the former Union, thus reducing the risk of accidents at these plants. Also associated with the solution to this problem is the draft law "On State Policy in the Area of Handling Radioactive Wastes," which went through its first reading in parliament on 16 April, and (to an even greater degree) Yeltsin's edict issued yesterday "On the Fulfillment by the Russian Federation of Intergovernmental Agreements on Cooperation in the Construction of Nuclear Power Plants Abroad."*

The president's edict establishes the procedure for salvaging nuclear wastes. Some of the funds obtained for granting services for their processing will be targeted for implementing ecological programs and radiation control. The Ministry of Nuclear Energy of Russia, with the

participation of interested ministries and departments, is instructed within two months to submit for government consideration drafts of bilateral intergovernmental agreements on cooperation in the area of peaceful use of nuclear energy. Moreover, the Ministry of Nuclear Energy in conjunction with the Ministry of Environment and Natural Resources, the Ministry of Foreign Affairs, the Ministry of Foreign Economic Relations, the State Committee for Economic Cooperation with CIS States, and the Federal Directorate of Russia for Nuclear and Radiation Safety within a month's time must develop a procedure for accepting spent fuel from foreign nuclear electric power plants for subsequent processing at Russian enterprises.

Negotiations on the enlistment of foreign investments (mainly Western) for the development of enterprises involved in the processing of nuclear wastes are to be conducted by the Ministry of Nuclear Energy and the Ministry of Foreign Economic Relations. These negotiations are already being conducted at the level of the Ministry of Nuclear Energy. In keeping with their results the EC Communities Commission has already made the first contribution to the fund for ensuring the safety of nuclear power plants in East Europe and the former Union, which amounted to \$24 million. The total volume of the program, which is administered through the European Bank, is \$700 million, and 60 percent of the sum will be contributed by the EC Commission and the rest—by the United States, Canada, the FRG, Great Britain, France, and the Scandinavian countries on a bilateral basis. Most of the funds will be used to modernize Russian nuclear energy facilities: By the year 2010 it is planned to replace all units of the first generation with new reactors of the housing and channel types.

Nuclear Power Facilities on the Territory of the Former USSR (except Russia)

Ядерные энергетические объекты на территории бывшего СССР
(кроме России)

Key:—1. Palomski—2. Estonia—3. Lithuania—4. Ignalina—5. Rovno—6. Chernobyl—7. Khmelknitsk—8. Ukraine—9. Yuzhno-Ukrainsk—10. Zaporozhzhya—11. Crimea—12. Sevastopol—13. Armenia—14. Kazakhstan—15. Shevchenko—16. Armenian—17. Constructed nuclear power plants—18. Nuclear power plants under construction—19. Nuclear power plants with construction frozen—20. Reactors at naval training centers.

RUSSIA

Murmansk Oblast Approves Creation of Local Ecology Funds

93WN0398C *Murmansk POLYARNAYA ZVEZDA*
in Russian 17 Mar 93 p 1

[Decree of oblast administration of 2 March 1993, No. 78]

[Text] "The state of ecological funds on the territory of Murmansk Oblast" was adopted. In accordance with that document oblast and local (city, rayon) nonbudgetary state ecological funds are now being created.

The sources for their formation, in part, consist of: payments for pollution of the environment and distribution of waste; funds received as a result of claims for reimbursement of damages and fines for ecological offenses against the law; funds received from sale of confiscated fishing and hunting equipment and products obtained with their utilization. The funds may be supplemented with voluntary deductions and donations by enterprises and individual citizens, including foreigners, as well as with income from publication, economic, and other commercial activity of the funds themselves.

The statute establishes the order of distribution of mandatory payments for norm and above-norm discharge and emission of hazardous substances, and distribution of waste. Ninety percent of these payments must go into a special nonbudgetary account of the oblast ecology and natural resource committee. Sixty percent of the funds received will be allocated quarterly for realization of local measures for the protection of nature, 10 percent will go into the Federal Ecological Fund for implementation of measures of national significance, while the remaining 30 percent will be spent on resolution of ecological problems on the oblast scale. It was decided to spend five percent of the total amount of funds received in ecological funds on bonuses for production collectives and workers of organizations for the protection of nature and citizens who have achieved important results in the preservation of the environment.

Ecological funds do not replace other sources of financing measures for the protection of nature. Resources out of these funds on the territory of the oblast may be spent only on goals connected with activities in the protection of nature and conservation of resources.

Local Officials Assess Chelyabinsk Oblast Ecology

'Mayak' Plant Remains Focus of Concern

93WN0387A *Chelyabinsk CHELYABINSKII RABOCHIY*
in Russian 18 Mar 93 p 4

[Interview with V. Bakunin and V. Chirkin, by S. Gershuni, under rubric "Ecology: Light and Shadows," and subrubric "On the Eve of the Plenum of the Soviet of the Trade-Unions Federation": "This Eternal Threat"]

[Text] In connection with the preparation of the plenum of the Chelyabinsk Oblast Soviet of the Trade-Unions Federation for questions of ecology, our correspondent met with V. A. Bakunin, chairman of the oblast committee for ecology, and V. P. Chirkin, deputy chief of the radiation hygiene department of the oblast center for sanitation and epidemiology inspection.

[Gershuni] Vasiliy Aleksandrovich, does the ecological situation in Chelyabinsk Oblast give cause for optimism?

[Bakunin] If one judges only on the basis of figures, yes. In 1992 emissions of toxic substances into the atmosphere dropped substantially—by 11.5 percent.

[Gershuni] Am I correct in thinking that this was the result of the activities of the committee that you head, and the introduction at industrial enterprises of smoke-purification and other environmental protection structures, advanced technologies to save natural resources, etc.?

[Bakunin] Definitely not. Of course, the environmental protection activities of the Committee for Ecology, and in particular the ecological monitoring, and the efforts of enterprises in this direction are yielding a tangible result. But mostly the reduction in the toxic emissions into the atmosphere occurred, alas, as a result of the reduction of production. The plants and factories are producing less output, so that the smokestacks are producing less smoke.

[Gershuni] But what about the construction of environmental protection structures that was so broadly advertised quite recently?

[Bakunin] Most enterprises do not have enough funds for this. And even where those funds exist, the contractors frequently do not assimilate them, as they race after production orders that are more profitable. For example, the activation of gas-purification units at the steel-casting shop of Uraltrakt has been postponed for three years. At electrical steel-smelting shop No. 3 at ChMK [Chelyabinsk Metallurgical Plant], at shop No. 2 of the Zlatoust Metallurgical Plant, at the Magnitogorsk Cement Plant, and a number of other enterprises, environmental protection units have not been activated.

Something that is very alarming is the fate of the inhabitants of the city of Karabash and environment surrounding it. Unfortunately, the retooling of the copper-smelting combine that is situated there, which is the chief destroyer of the environment and a source of diseases among the population in that region, has been postponed. There has also been nonfulfillment of certain other measures that could have considerably reduced the pollution of the atmosphere in the Southern Urals.

[Gershuni] What is the condition of the other natural spheres in our oblast? The rivers, lakes, and forests?

[Bakunin] Smaller quantities of raw runoff have begun getting into our rivers. The remodeling of the southern purification structures has been completed at the Uralsk

Motor Vehicles Plant. The amount of raw or insufficiently purified runoff that now gets into the Miass River is 1.7 million cubic meters less. Purification structures have been activated at full capacity at Troitsk. The quality of the water in the Uy River and the Troitsk reservoir and many other bodies of water has improved noticeably.

But it is difficult to say anything good about the protection of the forests. Illegal fellings are continuing. It was necessary to apply penalty sanctions in large amounts to the Chelyabinsk-65 and Chelyabinsk-70 mechanized timber farms, to the Zlatoust Timber Combine, the Krasnoarmeysk timber farm, etc. The environment is also being harmed by the people to whom, as the expression goes, God himself gave the responsibility of protecting it—amateur garden growers who chop down forest type trees alongside their plots, and people buying dachas and camps. There have an especially large number of such instances in Miass. We have prepared a decision for the oblast Soviet concerning a ban against chopping down the forest in the city's green zone for establishing gardens there.

[Gershuni] And now the main question that is troubling absolutely and literally every inhabitant in the oblast: the radiation situation.

[Bakunin] At the present time our committee is not involved with questions of radiation safety. We only finance certain scientific research in this area. Vladimir Petrovich Chirkin can answer your question better.

[Gershuni] Vladimir Petrovich, in issue No. 5 of our newspaper an item by a female retiree from Muslyumovo cited the words of RF [Russian Federation] deputy minister of public health Shakhmatov to the effect that "...on the banks of the Techa River the situation is normalizing and does not represent any danger to the population," that people do not drink the water from the Techa, that radionuclides do not get into their organisms, and that the health of animals there does not cause any alarm.

[Chirkin] If the distinguished deputy minister really feels that way, then maybe he can resettle on the banks of the Techa without any trepidation. But we feel that there is a serious threat to the health of the population in the Techa drainage area. Actually, the situation has stabilized somewhat during recent years. But even if now there are no new radioactive substances getting into the bodies of water from the production activities of the "Mayak" PO [Production Association], the neutralization of those substances that have already gotten into that water and that are located in the mud, for example, cesium, will take at least 300 years. And if such an isotope as Plutonium-239 has gotten into that water—and we do not preclude this—then the natural processes by which nature gets rid of it will take 24,000 years.

[Gershuni] I have heard that the area of radioactive contamination in our oblast might expand...

[Chirkin] Yes, it might, if radical steps are not urgently carried out. The fact of the matter is that during the initial period of the activity of "Mayak," radioactive waste products were dumped into natural bodies of water, including Lake Karachay. The water from that lake leached through the bottom stratum and formed a large-scale lens under the bottom. The radioactive water from that lens is spreading in the direction of Chelyabinsk through underground cracks. So the threat of radioactive contamination can also hang over the capital of the Southern Urals.

[Gershuni] Is anything being done to prevent this threat?

[Chirkin] Yes, of course. We are studying the routes by which the water is spreading from the underground lenses, and the possibility of reliably sealing the underground cracks on that route. The committee for ecology is working on the introduction of an automated ecological monitoring system, which will make it possible, on the screens at specialized posts, to monitor constantly the state of environment and to take the appropriate steps promptly in the event of danger.

[Gershuni] How much has man suffered from the effects of radiation as a consequence of nuclear accidents at "Mayak," and what is being done to rehabilitate the population that has suffered?

[Chirkin] I wish you had asked me an easier question... Because of the notorious "secrecy," not much information has been published, and that which has been published frequently contained falsified data. There was no qualified medical supervision of the type in which two groups of a sufficient number of people—the basic group and the control group—are studied. There have been no official reports concerning the instances of death that were linked with the explosion of a container filled with radioactive waste products in 1957. But it is difficult to meet a resident of the rayons adjacent to "Mayak" who did not lose a relative or a friend as a victim of cancer. Most of the physicians consider radiation to be the cause.

What is required to protect the health of the current population of the territory that was subjected to radioactive contamination? Normal human living conditions, including augmented nutrition, good housing, the possibility of relaxing and getting medical treatment—in a word, everything that we continue to refer to by the reinforced concrete word "sotskultbyt" [social, cultural, and everyday living conditions]. And it is the state that should create these conditions, because it was the state that brought the people on the territory that had suffered to the brink of disaster. Trade unions having the exclusive right to administer the social insurance fund can do a very great deal by using the money in that fund.

Personally, however, I feel—and I emphasize that this is my personal opinion—that it is inadmissible to do any further treatment at "Mayak," the accumulation for

perpetual storage of the nuclear fuel waste products being shipped in from other regions, or the construction of the Southern Urals AES.

Rehabilitation Expenditures Detailed

93WN0387B Chelyabinsk CHELYABINSKИ RABOCHИY in Russian 25 Mar 93 p 3

[Interview with V. Matveyev, by S. Arepnev, under rubric "8th Plenum: In the Center of Attention—Ecology": "Rehabilitation: The Time to Pay Off Debts"]

[Text] If you live in Russia, then wherever you live, you are being subjected to an ecological effect. It is another matter that this effect can be either beneficial or detrimental—depending upon the force with which the ecological factors effect the organism.

For us, the people who live in the Urals region, and especially the southern part of it, the favorable contact with the environment surrounding us is being replaced, at an increasingly sharp and implacable rate, by harmful contact. Just look around you and see whether you meet a lot of people who, even if they are not absolutely healthy, are not undergoing medical treatment constantly or do not complain about constantly being indisposed or not feeling well. And ask yourself whether you are not becoming too frequent a patient at a clinic or too frequent a customer at a pharmacy?

In recent time there has been increasingly frequent mention of the need to have a Geiger counter at home or in your suit pocket. For us who live in Chelyabinsk, this is a constant and terrible danger. As it superimposes on the obvious, tangible harmful ecological factors—industrial smoke, exhaust gases, water that is saturated with nitrates and household runoff—radiation creates a special "cocktail" that is pernicious to every living thing...

It is this last mentioned circumstance that has become the reason why the central authorities have finally directed their attention to the calamitous condition of the people in the Southern Urals, especially those living on the territory that has been subjected to radioactive contamination as a result of the accidents at the notorious "Mayak" PO. Our oblast has been allocated funds that are necessary for rehabilitating the contaminated territories and for rendering assistance to the population that has suffered. In this regard, a correspondent from the oblast trade unions' weekly met with Vladimir Aleksandrovich Matveyev, chief of the Department for the Development of Programs and the Rehabilitation of Territories (of the Committee for Emergency Situations).

[Arepnev] Could you please tell me how this large and painstaking job is being carried out?

[Matveyev] The most important thing, of course, is finances. In 1991, within the framework of the republic level 1991-1992 Program for Urgent Measures that had

been developed on instructions from the Russian Federation Council of Ministers, 90 million rubles were allocated. Those funds, naturally, were addressed by the republic budget toward developing the social sphere in the rayons of Chelyabinsk Oblast that had been contaminated by radionuclides. In addition, approximately 50 million rubles were sent to the "Mayak" PO for engineering-rehabilitation measures, and for improving what are officially called the "handlings of radioactive substances."

[Arepnev] Our readers would like to know how those funds were used, and whether there were enough funds to carry out what had been planned.

[Matveyev] We know that, in the rayons that had been affected by radionuclides, the population that had suffered were moved from their homes and resettled in inevitable prefabricated houses. We shall not forget that 30 years have already passed since then. The houses, which were definitely not the answer to their prayers in the first place, are today nothing but tumbledown shacks that do not protect anyone against the bad weather or the Urals frosts.

Therefore the lion's share—60.9 million rubles—was used on the construction front. Do you want a breakdown of that figure? All right, then: 32.72 million rubles were used at projects of municipal housing construction. An additional 22.73 million were used to develop the base for the construction industry and the building materials industry. That is especially important, since it provides the opportunity to manufacture everything necessary in the disaster rayons themselves, which is both more convenient and cheaper.

A total of 10.1 million rubles went into the repair and construction of projects in public health and public education. And, finally, 2.21 million rubles proved to be available for the extremely important job of executing the program of measures having as their goal the prevention of additional radionuclides from getting into the bottomlands of the Techa River.

[Arepnev] Vladimir Aleksandrovich, the money that we are talking about is only a part of the rather large appropriations that were allocated to Chelyabinsk Oblast in that same year of 1992.

[Matveyev] The ecological problem is not an individual factor, but, rather, is a tremendous complex, so that, of course, the scale of the rehabilitation measures must be impressive. Properly speaking, they have indeed been such...

For example, last year our Chelyabinsk Oblast was allocated more than 2.6 billion rubles of budgetary appropriations, plus 1.44 billion rubles along the line of capital investments. How were these tremendous amounts of money distributed? There are a large number of areas in the rehabilitation plan. Here are a few of them. First, the scientific-technical support of the practical measures. Second, the support of the high tech

handling of the radioactive substances. Carelessness or the shortage of modern technical means when coming into contact with the hazardous radioactive "enemy" can easily lead to consequences that are no less catastrophic than, say, the events of 1957.

Large amounts of money went into cleanup measures on the oblast's territories that had been contaminated by radionuclides. Considerable capital investments were also needed for organizing the process of studying the ecological situation in the region and for monitoring the state of the environment. In addition, there have been measures to preserve the health of the citizens who have felt the entire "delight" of coming in contact with the nuclear "genie"...

[Arephev] Could you say a few words about this complicated process?

[Matveyev] Last year a large series of operations was carried out at "Mayak." The goal of those operations was to develop and introduce the most modern technologies for handling radioactive substances. You will agree that no one would ever think of begrudging that money. Prototypes of equipment for a closed system for handling radioactive waste products were executed. Charts showing the land use on the territory of VURS [Eastern Urals Radioactive Track] were drawn up, with an evaluation of the spatial distribution of the radionuclides in the areas used for agricultural purposes. A retrospective evaluation was made of the instances in which radionuclides, heavy metals, and pesticides had contaminated the output of the personal plots situated in "Mayak's" zone of influence.

And what is especially important is that cartograms were prepared, with an evaluation of the radiation situation on the territories of the Tyburskiy, Khudayberdinskiy, Bagaryakskiy, Kozyrevskiy, and Mulyumovskiy sovkhozes. An evaluation was also made of the content of Strontium-90 and Cesium-137 in the agricultural output of five inhabited places in the Karabolka River delta.

A considerable amount of work was done to collect and analyze data concerning the overall ecological situation on the territory of Chelyabinsk Oblast that had been subjected to radioactive contamination. Comprehensive radiological research was carried out on the territory of VURS, a digital electronic map of that zone was developed, and a meteorological data bank is being developed, as well as the envelope of the data bank concerning the chemical contaminants and sources of contamination of the VURS zone.

[Arephev] All of this is very necessary and interesting. But people will probably want to know what concern is being demonstrated for those who, so to speak, have experienced with their own bodies the destructive effect of radiation.

[Matveyev] Of course, the population that has suffered has been, and continues to be, in the center of attention.

Last year lists were prepared, registering the names of 18,000 people who have resettled from the Techa River. A list was also prepared, registering the names of those who have experienced chronic radiation sickness. The number of such individuals is currently 736.

[Arephev] Do I assume correctly that these are mostly adults?

[Matveyev] Yes, but the younger generation also has not been left without attention. In order to evaluate the remote consequences of radiation, specialists from Branch No. 4 of the Institute of Biophysics carried out a project to register 5000 children who had been born in families that did not resettle from the territory of the VURS. In connection with this research, two expeditions were made to Kunashakskiy Rayon by specialists from Chelyabmedinstitut [Chelyabinsk Medical Institute].

Funds for the medical rehabilitation of the population that had suffered were allocated directly to the administrations of the appropriate rayons. They used those funds to improve the children's health at specialized sanatoriums and sanatorium schools, to render medical assistance, and to purchase medical equipment for rayon hospitals. For example, a laser laboratory and a stomatological unit have been purchased in Argayashskiy Rayon. A set of ultrasonic diagnostics equipment was purchased in Kyshtym. A considerable amount of funds was used to purchase single-use syringes, medicines, motor transportation...

[Arephev] Other than scientists and medics, who is participating in this large and extremely necessary job?

[Matveyev] I would mention first of all the oblast's department of agriculture. It has assisted in carrying out a large series of operations to restore the land in the rayons that have suffered, in purchasing equipment to reinforce the material-technical base of the rayon administrations of agriculture, and in carrying out the operations to restore the forests on the territory of the VURS.

And there is something else. It is necessary to say a good word about the trade unions: they have been giving a large amount of support to all the rehabilitation jobs.

Tomsk-7: Ministries 'Console' Public
93WN0396A Moscow *FEDERATSIYA* in Russian
No 46, Apr 93 p 3

[Article by Petr Pliyev and Vasiliy Aleksandrov: "Everything Is Fine, Beautiful Marchioness, or Once More about Tomsk-7"]

[Text] Until recently, only a few specialists and spies new about the Tomsk-7 facility. But right after the accident there, this name was simply splashed over the pages of newspapers and on the radio and television.

The official organs, of course, began to console the public through the mass media: Nothing especially terrible has happened. This kind of a comforting note was also heard

at the last two recent news conferences that were held by the Ministry of the Environment and Natural Resources and also by the Ministry of Atomic Energy of Russia.

In comparison with the catastrophe at the Chernobyl AES [nuclear power station]—50 million curies, or Chelyabinsk—2 million curies, the accident at the Tomsk chemical combine seems, it was suggested by those who were present there, like a harmless child's toy: a total of 40 curies. And the concentration of radionuclides in the water will be even several orders of magnitude less than is permissible for drinking water.

It appears that this time, it was a matter of luck. But the public, and not only the Russian public, is disturbed, nevertheless. It is no accident that the writing and picture-taking fraternity from many countries questioned Minister of Atomic Energy V.N. Mikhaylov in such detail, why such a thing could happen, and where were the guarantees that the next time the negligence of officials, which borders on the criminal, will not lead to irreparable consequences. Even the minister could not give a one hundred percent guarantee.

Also sounding the alarm are representatives of the Russian department of the international Greenpeace organization, to which it seemed that the dimensions of the catastrophe are being covered up. But the evaluations, it must be noted, both of the independent and official state commissions, coincide in all parameters. The summing up is: Boys, do not go into a panic.

However, this does not at all make it easier for those who live on the contaminated sectors, especially the peasants from the village of Georgiyevka. Agricultural work is at hand. Potatoes have to be planted. They will be planted, of course, but what will be harvested in autumn? The scientists are unable now to answer this question in any way. But in the meantime, the residents of rural areas are enriching their vocabularies with new expressions like curie, Roentgen, alpha and beta particles, very likely adding their own, which more accurately express their attitude toward the accident that occurred.

And more. How great were the material losses from the explosion? Nothing is being said about this at present. But one can imagine what they are, if just the Ministry of Ecology of Russia in its top priority inspection of the contaminated region required 7 million rubles [R], and R30 million for subsequent work.

Finnish Firms' Plan For Petsamo Nickel Plant Cleanup

93WN0378A Helsinki HELSINGIN SANOMAT
in Finnish 4 Apr 93 p 4

[Article by Marja Salmela: "Outokumpu Would Like To Modernize Petsamo Nickel Smeltery; Annual Sulphur Discharges Would Be Almost Completely Recycled By Flash Melting"]

[Text] Oulu—Outokumpu, Ltd., plans to offer its own flash melting process to modernize the Petsamo nickel smeltery. With it the 280,000 tons of sulphur discharges produced annually should be almost completely recycled.

The Russians are organizing international competitive bidding to modernize the smeltery.

There is an urgent need for modernizing the Petsamo nickel smeltery, which is extremely polluting. According to studies conducted, the smeltery's sulphur discharges are still increasing.

The director of the Lapland Water and Environment District, Kari Kinnunen, Ph.D., and the head of Outokumpu's Petsamo project, Pentti Nissinen, agree that the smeltery and its surrounding area are in catastrophic shape. If the collective combine were in Finland, according to Nissinen, government officials would immediately refuse to allow it to operate.

Forbidden To Take Samples

"Sulphur discharges have increased even though, according to reports, production has fallen off. Apparently, they are incapable of recycling the sulphur there any longer at all," Kinnunen thought.

The situation is a troublesome one for manager Igor Blatov, who forbade environment researchers from the Kola Science Center to take samples in the vicinity of the combine last summer.

"The researchers had a permit from the Russian Environment Ministry, but it did not make any difference. The manager of the combine has as much power as an emperor," Kinnunen described the situation.

The Murmansk District Environment Committee has not interfered with the discharges. It just orders the combine to pay more and more fines, the money from which the committee can use for its own activities.

Finnish metallurgy experts could not visit the smeltery last August because the roof of the smeltery had collapsed.

Pentti Nissinen visited Petsamo last in December. "Visually, it looked as though all of the sulphur was being discharged directly into the sky," he said.

He suspects that the combine can no longer convert the waste sulphur into sulphuric acid. "Either the equipment has broken down or they were forced to stop converting it since they could not ship the sulphuric acid elsewhere in Russia because of a shortage of transport."

Aid for Environment and Employment

The Petsamo smeltery is still operating with a technology that dates back to the 1930's. Finland and Norway have been trying to pressure the Russians into modernizing the plants for nearly four years now.

A half a year ago Outokumpu and the Norwegian company, Elkem, offered them a package worth \$640 million with which the combine could have been put into top shape. In the Russians' opinion, the package was too expensive at that time.

Now they want new bids. Bids must be submitted by this fall. This time Outokumpu is entering the race alone. The company plans to lower its bid to less than \$400 million, or about 2.4 billion markkas. "The Russians have led us to understand that the price has to be set at that level," Nissinen said.

The company intends to cut the construction of two apartment buildings, a training center, a health center, and a warehouse out of its previous bid. They would be left for the Russians to build for themselves.

Outokumpu is also trying to argue in favor of its bid on the grounds that the flash melting process will save them about 100 megawatts of electricity, or about the amount of power produced by a medium-sized power plant. Thus the load borne by Kola's power plants would be reduced.

"True, they do think that power costs them nothing, but if they were now to begin to figure what they have to pay for it too..." Nissinen hoped.

Need for International Financing

He estimates that the project will provide jobs for several thousand Finnish planners and subcontractors. This would mean jobs for machine shops and shipping companies in both Lapland and elsewhere in Finland.

In addition to Outokumpu, the Norwegian company, Elkem, and the Swedish company, Bolide, are jointly competing for the project. German and Canadian firms may also participate in the competition.

In addition to the Nordic countries, other providers of capital will be needed to get the Petsamo project off the ground quickly and complete it, Kaj Barlund, the chairman and managing director of the Environment Board, who recently visited Kola, emphasized.

He hopes that the World Bank and the European Bank for Reconstruction and Development (EBRD) will be the chief providers of credit. The latter finances projects especially in East Europe.

Outokumpu has already presented its project proposal at EBRD headquarters in London. "If we act quickly, the construction work could be in motion by next spring," Pentti Nissinen estimated.

Residents Reluctantly Provided With Information on Environment Problems

Apatity—"Sometimes it's hard to breathe here. Maybe it's because of the pollutants, I don't know.... We ought to get more information on ecological studies," Elena Kamagina pondered. She was taking Marina, who is a little over a year old, for a walk in downtown Apatity.

There are not quite 90,000 residents in this town on the Kola Peninsula. Apatity makes its living from fertilizer dug from a mine and the industry for processing it.

The mother of two daughters, Elena Kamagina believes that there is already enough information on the effects of pollution. It is just that it is not reported in the daily newspapers, for example. "People are worried, they talk about respiratory disorders...."

Nevertheless, Elena does not want to move away from Kola as do many other women who are afraid that their children will become ill.

A report on the state of the environment in Russia put together by the Russian Environment Ministry states that the discharges produced by industrial plants on Kola are shortening people's lives and that nine out of 10 children are born "immature," to use the term employed by local physicians.

"People's awareness of environmental problems should be quickly increased so that they will begin to demand that the discharges be reduced. Only in this way can we protect Lapland's lakes and forests from the pollutants that spread from Kola," Kari Kinnunen, the director of the Lapland Water and Environment District, said.

The district has been cooperating with environment researchers of the Kola Science Center's Institute for the Industrial Problems of the Northern Areas (INEP) for about three years now. Finland has made Apatity a gift of a water laboratory which is capable of investigating the acidification of Kola's lakes, among other things. The data bank established by the Science Center can evaluate the condition of the environment and compare the results with those obtained in Finland, Norway, and Russia.

When they got word of the discharges and precipitation, Kola industrialists got angry and began to complain about the activities of the INEP and the directors of the Science Center got frightened.

Kaj Barlund, the managing director of the Environment Board, is disappointed that his partners in cooperation are not trying to influence public opinion.

Gennadiy Kalabin, the director of the Kola Science Center, defended himself: "Ordinary people do not understand ecological matters; they're not trained to. They're only interested in work and money for food."

Finnish Agency Aiding Karelian Plant Construction

93WN0378B Helsinki HELSINGIN SANOMAT
in Finnish 7 Apr 93 p 11

[Article by Jaakko Pihlaja: "Finns Clearing Up Russian-Karelian Water Problems; Construction Begins on Lahdenpohja Sewage Treatment Plant"]

[Text] Vartsila—The Water and Environment Board is contributing to the construction of a sewage treatment plant in the town of Lahdenpohja. This is the first environmental project in the Karelian Republic. Chairman and general manager Kaj Barlund went to Lahdenpohja on Tuesday [6 April] to discuss the details of the project.

According to Barlund, one treatment plant will not solve Ladoga's problems, but it is a first step toward improving the structure of the republic's basic service. The Water and Environment Board is also launching a water supply project and investigating Karelia's groundwater supply.

According to Barlund, the goal is for the Karelians to themselves take charge of the construction of their water supply and sewage facility. The Water and Environment Board is making an effort to effectively train them, which will guarantee that the aid money is spent on a durable facility.

The first phase of the water supply project is a two to three-year training period and the acquisition of basic knowledge, which will be conducted in the Kuopio Water and Environment District. Finland's costs for this will come to 250,000 markkas.

At the present time the wastewater from the 11,000-resident population center of the town of Lahdenpohja goes directly into Ladoga. The overall cost of the treatment plant will come to a total of 16.6 million markkas, Finland's share of which will be about 4 million. The Russians will take care of a large part of the building of the treatment plant, but the equipment will be supplied by Finland.

The Finnish contractor has planned the project with the Karelian housing and local economy combine and is reaching agreement with the Lahdenpohja District on the construction work. The funds for the project will be allocated from the Water and Environment Board's Eastern Europe Project.

Phased-Out Equipment Exported to Karelia

The Water and Environment Board collected a lot of phased-out equipment which it donated to the Karelian Environment Ministry and the housing and local economy combine on Tuesday. Environment Minister M. Feshenko accepted the gift in Vartsila.

The equipment caravan included five excavators, 10 vehicles, shacks for workers to take a break in, tractors, and various machines from lathes to sump pumps. The equipment is to be transferred from Vartsila to its destinations by rail.

According to Barlund, the Water and Environment Board will have turned over all of its own heavy equipment by the end of 1997. If need be, perhaps a second lot of machines may be collected later.

The monetary value of the machines is not great as phased-out equipment goes, but, repaired and cared for by operators trained in Finland, they will have years of useful life.

Expert on Pollution Problems Says Health Endangered

934E0690A Moscow KURANTY in Russian
No 65, 7 Apr 93 p 4

[Interview with Nina Antipova by Lidiya Lukyanova: "Cities Ringed By Dumps"]

[Text] Up to 1989 information about illness in the population caused by pollution of the environment in the USSR was hushed up. Sanitary inspectors were obliged to keep silent. And when the data were declassified, we found out about the tragedies at Chelyabinsk-40 and at Altay. The chief specialist for the State Committee for Sanitary-Epidemiological Surveillance of the Russian Federation, Nina Antipova, believes that in cases of illnesses caused by environmental pollution, the guilty party—whether the state or an enterprise—is obliged to provide compensation for damage done to health. Choking on waste products, Russian cities are in a ring of dumps

[Lukyanova] Nina Dmitrievna, compared with the period of stagnation, is it easier or harder for sanitary inspectors to work?

[Antipova] It has become easier to work because all information has become accessible. And we can give an answer in accordance with our competence to all questions which come to us from deputies, departments and citizens.

[Lukyanova] And how are relations of sanitary inspectors with "closed" enterprises developing?

[Antipova] Enterprises of the Ministry of Defense remain "closed" and no information is furnished to the committee. But we are finding a common language with enterprises under the jurisdiction of the Federal Administration for Medical-Biological and Extremely Urgent Problems. The administration always provides us with information. I have been taking part in the work of destroying underground launching facilities for ballistic missiles. We have been working together with specialists of this administration, and we have been provided with all the data for problems for which an expert evaluation was given.

[Lukyanova] And is there a guarantee of independence for the expertise of our country's specialists. There are too many bad memories. The freshest of these is Chernobyl.

[Antipova] It is a shame that there is a lack of trust in our specialists, although, it so happens, people (particularly often deputies) advance their careers by making a show of distrust. here is an example of that. In Orenburg, the

drinking water turned out to be polluted by chlorephe-nols. The chief sanitary inspector in the oblast, out of three variants for getting out of the emergency, chose increased chlorination of the water. It turned out afterward that, under those conditions, he had found the single correct way out, in order not to deprive the population of water, which could have triggered an outbreak of intestinal infections. Deputies raised a storm of public anger against the inspector. International experts invited from the World Health Organization came to the same conclusion that the chief sanitary inspector had reached. We succeeded in vindicating the inspector, but how much did that expertise cost? And the deputies tried to use the situation to climb up to the next rung on the career ladder.

[Lukyanova] Everyone remembers the cunning, not to say deceitful, position of the State Committee for Hydrometry and Meteorology (Gidromet) in evaluating the situation in Chernobyl after the explosion. And now are its data, for example, for Moscow objective?

[Antipova] There are too few posts in this services to monitor the atmosphere. And at best samples are taken three or four times every 24 hours, for only 20 minutes, whereas abroad samples of the air are taken around the clock. Furthermore, analysis of the air is conducted for a total of four basic and four to five specific ingredients, but about a hundred of these ingredients are discharged into the atmosphere. Moreover, to this day enterprises under the jurisdiction of the Ministry of Defense do not furnish data on their discharges. Gidromet is not technically capable of testing the air for all specific ingredients in the atmosphere. Thus we do not have reliable information about pollution of the atmosphere in Moscow.

[Lukyanova] There have been many arguments about residential construction on the former dump in Mitin. What is the outcome?

[Antipova] The sanitary service in Moscow is dealing with this very urgent problem. There are impressive specialists there. And our committee must deal with questions of managing the environment and health, and also industrial waste. Society has already come up against the problem of dumps. In the 1930s and 1940s, industrial waste products were buried beyond the city limits. Now these outlying areas are new regions of Moscow. Waste products, even radioactive and toxic ones, have simply been buried in the earth, without preliminary treatment of the earth. This is inadmissible. Construction is now being started, without knowing who has buried what where.

[Lukyanova] At least are the locations of these burial places known?

[Antipova] By no means all of them. Directors of suburban Moscow collective farms and state farms were permitted to bury directly in the earth pesticides whose period of effectiveness had expired. And now this earth is also part of Moscow. The directors were obliged to

draw up formal documents, to indicate the quantity of the pesticides, which was not supposed to exceed 10 kilograms. But everything was done without supervision. Now we are trying to find the burial sites of the pesticides, but we no longer find them in the earth but in the drinking water; the pesticides move with underground waters into reservoirs. Sanitary inspectors are forced to look for the burial sites for pesticides in the reverse direction: From where are the pesticides flowing down into the reservoir, where is the water inlet? And, of course, they have been buried not in amounts of 10 kilograms in one place, but in significantly larger amounts. Here is what disturbs me in relation to this: Those who have done serious harm to nature and human health are now quickly becoming defenders of nature. Forgive me, but I do not believe in their sincerity.

[Lukyanova] You have hit the bulls-eye! Specialists of the Ministry of Water Management, the ruinous fruits of whose activity are lamented throughout the country, now have become officials in the Ministry of Natural Resources and its regional organs. Have they reformed, one and all? Isn't that odd?

[Antipova] Such hypocrisy is observed everywhere. But I will continue my answer to your first question—about the complexities in our work. Many joint ventures are being created now; to supervise their production activity is more complicated: Whatever step they take is a commercial secret! But what secret can there be when health is affected? Monitoring of joint ventures will be the same as for state facilities. No allowances, otherwise there is a danger of Russia's being transformed into a precipitation tank. They want to foist on us polluting technologies that are outdated for Europeans and, for a fee, bury in our earth very toxic waste products. For example, the swiss firm Promos Lozanna has proposed that the industrial association "Bryansktsment" bury 120,000 metric tons of chemical waste products a year. They want to ship them to us near Bryanshina, which has suffered from Chernobyl. But any increase in the burden people bear here is intolerable. In the document that was presented, I read a sentence like this: "This does not exert a big influence on health." If it "does not exert," then why do they intend to ship the stuff such a long distance. Bury it in your own place! A general agreement has already been prepared, and "Bryansktsment" for some reason is acting in the name of our government as the customer placing the order. I have written a letter to the government so that they analyze the matter.

[Lukyanova] That would be good. Russia is choking on its own waste products. Around any city there are multi-kilometer dumps. And near Moscow, too. Is the problem of handling waste products being solved or is Moscow on the threshold of epidemics?

[Antipova] We need to build refuse processing plants like those abroad, where waste products are sorted before they are burned. And, of course, we should buy a plant only with a purification system for waste discharged into the atmosphere. Then we will not choke on refuse. Right

now, Moscow is already being suffocated by unauthorized dumps. The consequences are evident. Waste products that do all kinds of harm are being shipped to dumps. A flammable mixture arrives, and dumps burst into flame spontaneously. And this is secondary pollution of the atmosphere, which is still worse. Unauthorized household dumps are not isolated from the soil. Rains come, and toxic substances seep into water beneath the ground and go into sub-soil water, and that is the most terrible.

[Lukyanova] Do you mean that beer does not ruin people, water ruins people? And what illnesses are caused by pollution of the air, water and soil? There is the view that oncological diseases are caused by pollution. Is this so?

[Antipova] One cannot say that all oncological diseases are linked with pollution of the environment. This is not in accordance with the data of the World Health Organization. There is a direct link only with respect to occupational diseases. For example, bladder cancer among those who work with aniline dyes. And diseases of the urinogenital organs are more frequently encountered among those who are connected to mercury or come in contact with its discharges. Lung diseases, diseases of the larynx and asthma are closely tied to pollution of the environment. But smoking, stress and diet are also directly linked to oncological illnesses. Our committee recently held a scientific-practical conference on the theme "the environment and health." Sanitary inspectors from the cities of Russia were troubled by a fact such as this. Schools were once the focus of noise, rumpus and bustle. Children are children. But now children in school do not make noise, schools have become quiet. Children are underfed and fall asleep as of the third or fourth lesson. Almost all children in the province are anemic, since they do not get enough iron in their food. Do the supreme Soviet and the government know about this terrible quiet?

[Lukyanova] Your committee has been assigned to prepare the section "Environment and Health" for "The White Book." There has been much talk about the book, but where is it? What is its goal?

[Antipova] "The White Book" consists of two sections: pollution of the environment and the situation regarding the incidence of illness in the population. The book was first published in the USA and from 1992 it has also been published here. It is published annually. The sanitary inspectorate is introducing its own data. At last, the incidence of illness in the population is linked with the condition of the environment. But, in tracking such a dependency, doctors must be extremely precise. But in Samara, for example, a doctor gave a newborn the diagnosis: liquification of the brain from pollution of the environment... Our committee has prepared and sent to the Supreme Soviet and the government of Russia a package of programs, the essence of which is as follows: It is necessary to give compensation for damage inflicted on a person by illness connected to pollution of the

environment. But in order to bring suit, it is necessary to have a solid basis of proof. Thus misrepresentation cannot be allowed.

[Lukyanova] I understand that no court will accept an accusation of "liquification of the brain." But sanitary inspectors are constantly leery about publicly telling the whole truth about the ecological situation and the health situation. They believe it is inexpedient to "frighten" the population. But the result is the reverse—the complete ignorance of society. Is such tranquility useful?

[Antipova] Very likely, we sanitary inspectors need to tell the truth more often. A person has the right to complete information about the health situation and the condition of the environment in which he lives. And then, perhaps, today's merchants will begin to more generously provide money for ecological and health-protection needs.

Underground Nuclear Power Stations Proposed for St. Petersburg

Advocate Foresees Enhanced Safety

93WN0407A St. Petersburg CHAS PIK in Russian
No 13, 7 Apr 93 p 3

[Interview with V. Struyev, Laboratory Chief of the Department of Radiation and Ecological Safety of the Krylov Central Scientific Research Institute, by V. Kozhin; place and date not given: "A Ring of Underground Reactors Instead of Polluting Smokestacks?"]

[Text]

Shipbuilders of St. Petersburg propose a new plan for development of power engineering in the region

The City Council conducted a discussion of a concept of power engineering development of the St. Petersburg region. It is based on the supply of the city with fossil fuel and creation of a power supply system. Modernization of the nuclear electric power station [AES] in Sosnovyy Bor is envisaged along with the delivery of natural gas to St. Petersburg from the Shtokman Deposit in the Barents Sea. There is another idea, however, which evolved at the Krylov Central Scientific Research Institute calling for the creation of underground nuclear electric power stations utilizing shipboard power installations. Moreover, the same institute, together with the Scientific Research Institute of Applied Mathematics and control processes of the St. Petersburg State University, worked out a new design for the creation of underground nuclear-hydrogen technological complexes. The CHAS PIK correspondent asked one of the creators of the design, Vyacheslav Struyev, laboratory chief of the Department of Radiation and Ecological Safety of the Krylov Central Scientific Research Institute, for some comments.

[Kozhin] Vyacheslav Petrovich, you are proposing to resolve the problem with fuel and energy. But why with the aid of underground AESs?

[Struyev] First I will cite several figures. At the minimum 80 percent of all the electrical energy in the region is used for heating. Heat is generated by heat and power stations as well as boilers which operate using fossil fuel within the city limits. Each year they burn over 7.5 million tonnes of coal and natural gas. Because of that there is acid rain in St. Petersburg and the oblast and the soil is being poisoned, while smog is getting thicker in the residential districts. On the other hand the atomic electric power station in Sosnovyy Bor has already been in operation for over 15 years and is becoming technically obsolete and outdated. Because of the planned stoppage of its units in eight more years there may be a real shortage of electric power in the city. Of course, it is possible to improve its design technologically, installing new reactors, but it would be impossible to provide 100 percent protection of the region from the possibility of radioactive contamination in case of a serious accident. In addition to that a new AES, in place of the old one, no matter how perfect, would be incapable of providing the city with heating. When hot water or steam are fed through a pipeline, heat is lost at the rate of one degree per kilometer and Sosnovyy Bor is over 100 kilometers from St. Petersburg.

For an ecologically pure heat supply it is necessary to position AESs next to the city limits, and that is safe only if the reactors are sheltered underground. That is why we propose to replace the heat and power stations and surface atomic electric power stations with underground stations.

Our energy-intensive region needs a lot of fossil fuel. Instead of bringing it in from remote parts of the country it would be better to create a local technological complex which would produce ecologically pure fuel—hydrogen. Upon combustion it produces ordinary water. We envisage this as follows: the underground atomic electric power station generates electric energy, part of which is used for the production of hydrogen, the excess heat is used for hothouse farming and for heating residences.

[Kozhin] But for us at present this is a rather expensive pleasure.

[Struyev] Not as expensive as it might seem. We lose more by purchasing gas in Siberia, a fourth of which never reaches us, being lost along the way. A total of only about 20 technological complexes with reactors with a capacity of 600 megawatts each in the suburban zone of the city are all that is required to fully satisfy the region with energy. Each reactor would cost us no more than one bloc of a conventional surface atomic electric power

station. The construction of deep underground tunnels with minimum expenditures per cubic meter of excavated ground has already been assimilated by the State Administration of Construction of the Moscow Subway. It is no more expensive to excavate mines and subterranean chambers for an AES at a depth of 100 meters than to build a "zero" cycle of an atomic electric power station on the surface. Energy modules may be installed in standard subway tunnels and stations 120 meters long. In such chambers it is possible to install reactors designed for combat vessels and submarines, assimilated by industry and earmarked for "conversion," similar to those that were being installed just yesterday by the Baltic and Admiralteysk Plants.

[Kozhin] Should there be an accident with any of these reactors, the underground water will carry radiation throughout the entire aquifer for many kilometers around.

[Struyev] In this case you are wrong. According to our calculations an underground AES is 10,000 times safer than one on the surface. In the vicinity of St. Petersburg there are sufficiently thick and stable waterless layers of Cambrian clay over 100 meters thick. The thickness of such layers makes an ideal barrier for migration of products of radioactive decay. The burial ground for highly active wastes of the AES at Sosnovyy Bor was created specifically on Cambrian clay. It is a sort of a ready "sarcophagus" for the reactor in case of an accident should there not be enough artificial barriers which are provided at the station—matrices and sheathes for heat-producing elements of the reactor vessel and the container designed for maximum possible pressure along with the reinforced concrete lining of the tunnel. Even with a hypothetical accident involving destruction of the vessel and core of the reactor there is no need to evacuate personnel living above the station inasmuch as radiation loads in that case as well will not exceed permissible norms. In addition to that underground the reactor is protected against an accidental hit by a heavy aircraft or a space capsule, a ballistic missile, natural disasters, or terrorism.

[Kozhin] Where will the spent nuclear fuel be buried along with the active wastes of the underground atomic electric power station?

[Struyev] They will not be buried at all. Wastes will be compacted and glassified (probably using the French "Cascade" technique) and stored for 100-200 years in one of the side tunnels next to the station in the same layer of Cambrian clay until technologies appear for their efficient treatment.

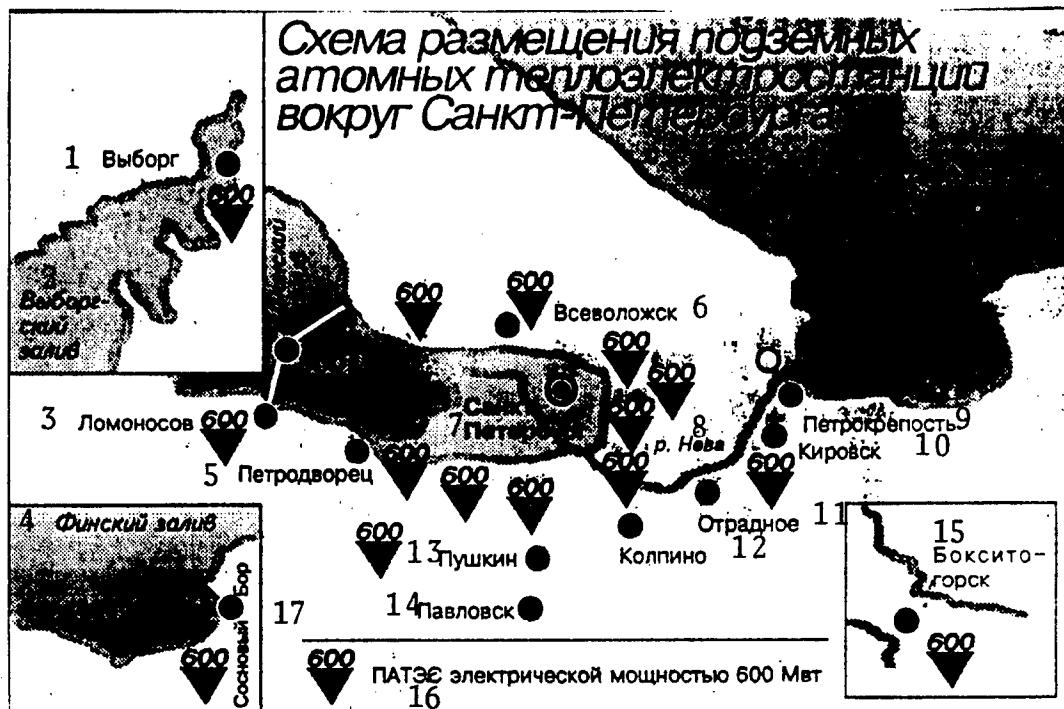


Diagram showing distribution of underground atomic thermal electric power stations around St. Petersburg

Key: 1. Vyborg 2. Vyborg Bay 3. Lomonosov 4. Gulf of Finland 5. Petrodvorets 6. usevolozhsk 7. St. Petersburg 8. Neva River 9. Petrokrepost 10. virovsk 11. Otradnoye 12. Kolpino 13. Poshkino 14. Pavlovsk 15. Boksitogorsk 16. 600 megawatt underground atomic thermal electric power stations 17. Sosnovyy Bor

Retired Admiral Questions Plan

93WN0407B St. Petersburg CHAS PIK in Russian
No 13, 17 Apr 93 p 3

[Interview with Vice Admiral Ye. Chernov (Retired), by V. Tereshkin; place and date not given: "A Ring of Underground Reactors Instead of Polluting Smokestacks"]

[Text] Following is the opinion of Vice Admiral Yevgeniy Dmitriyevich Chernov (Retired). He dealt with the operation of nuclear submarine reactors for some 26 years.

[Tereshkin] Yevgeniy Dmitriyevich, what do you think of the plans the shipbuilders are proposing?

[Chernov] I read the article very carefully but not only because I know reactors very well, but also because I am a Leningrad resident and finally a grandfather. I have two grandchildren, and I am hoping for more. They will be living in St. Petersburg. First of all, shipboard power installations cannot be utilized in permanent underground AESs. Everything, the steam generating and the steam turbine installations, must be designed and built anew. Why? Because atomic power installations were

designed and intended for periodic operation. Their principal power was used for the screw, the ship's engines. The creators of the plan, however, want to use them continuously.

[Tereshkin] At the Krylov Central Scientific Research Institute, however, the reliability of these systems is strongly emphasized.

[Chernov] It is important to remember that transportation reactors and everything that relates to them was produced under conditions created by a constant race to lower the weight and decrease their dimensions. All of this highly complicated equipment still bears traces of that race, which, of course, does not contribute to its reliability.

[Tereshkin] In your opinion what will happen if there is an accident at an underground station

[Chernov] I have experienced it on my own hide, what it is like in a nuclear submarine. When the creators of the design say that all of the troubles and the risk will remain underground—they are acting against their conscience. Radioactive gases will occur in the station, along with ashes, and "dirty" water. That means it will be necessary to ventilate the structures. Where can this discharge be

vented? After all, it is planned to locate all of the underground AESs close to the city.

The localization of such leaks is a special case. In my opinion it is impossible to state with such assurance that clays constitute a panacea for all radiation troubles. It is planned to use the same clay to bury wastes.

This also constitutes some very shaky reasoning. Let us do some figuring: the fuel core is replaced every two years. This produces some highly hazardous wastes with severe radiation. In addition to that there will also be a constant accumulation of intermediate-level and low-level radiation: parts, rags, protective clothing, tools. It is impossible to list everything. That is why hundreds of containers appeared in the navy which were sunk in the Barents Sea and the Kara Sea. We must be careful not to shift the situation that existed in the northern seas to the underground area around St. Petersburg. After ten years of operation of the underground AES it will be surrounded by waste, simply buried in it.

[Tereshkin] There is another rather important aspect—cooling of the reactor, which was side-stepped by Vyacheslav Petrovich Struyev.

[Chernov] No wonder, since the sea is the cooling system for a shipboard power plant. The coolant circuit removing heat from the reactor is cooled by the cold sea water which is pumped through the coolers. Vyacheslav Petrovich assures us that it is possible to contain the AES in a reinforced concrete “liner” of the type used in the building of subways. Very well! But what “liner” is he planning on using to enclose the cooling water? That means it will be necessary to discharge it to the surface into some body of water. This would require 20 lakes at the minimum. The designers, of course, will swear that they are going to create a double, triple circuit but the probability that radioactive contamination could penetrate into these lakes will always exist.

[Tereshkin] You forgot the hydrogen aspect—the advantages and ecological purity of the transport that will run on it.

[Chernov] At this time I am not familiar with the technological fine points of engines and boilers running on hydrogen. But I know very well that there were quite a few accidents, fires, and tragedies resulting from hydrogen explosions in the navy. After all, four percent of hydrogen in the air forms an explosive mixture.

I hope that this project will be stopped through the wisdom of our power-wielding structures. This problem must be resolved by ecologists, economists, and specialists in the area of radiation safety and not by traders in nuclear equipment and their intermediaries. A thorough, highly-skilled independent expert evaluation with participation of the IAEA [International Atomic Energy Agency] specialists is the only guarantee that no decisions fatal to future generations will be made.

Calls for Contamination Checks of Cargo Leaving Tomsk Area

PM1904145393 Moscow Ostankino Television First Channel Network in Russian 2022 GMT 16 Apr 93

[From the “Novosti” newscast: Video report from Tomsk by Vera Morozova and Konstantin Dudin, identified by caption; figures in brackets denote broadcast time in GMT in hours, minutes, and seconds]

[Text] [203102] [video opens with view of freight yard] [Morozova] You cannot help noticing the stockpiles of timber at the freight station. It is probably uncontaminated because it was felled before the explosion [at the Tomsk chemical combine] but, since the discharge of radioactive cloud, this and other consignments of freight clearly need to be checked. But there are no inspection points.

[G. Fedorov, chief of the civil defense staff, identified by caption] What it needs is people working round the clock but anyway there is no equipment.

[Morozova] What is the alternative? To carry out visual inspections of freight leaving Tomsk-7 where the accident occurred.

[A. Maslyukh, chief physician of the Health and Hygiene Inspectorate, identified by caption] Rolling stock and freight cars are not allowed into areas of increased contamination.

[Morozova] But why have the people in Kemerovo and other oblasts set up inspection points for freight entering those regions?

[Maslyukh] Precise safety measures must be suggested. I think that this was the right thing to do.

[Morozova] It would be even better to set up inspection points at exits from Tomsk, including on the highways. Who knows how much dust contaminated with radionuclides is being carried on the wheels of these vehicles? [video shows freight yard at Tomsk II station, interviews, trucks on road] [203155].

Tomsk-7: More on Yeltsin Nuclear Safety Directive

PM1604113393 Moscow ROSSIYSKAYA GAZETA in Russian 16 Apr 93 First Edition p 3

[“Official” column report: “Tomsk-7: Government Is To Take Comprehensive Measures”]

[Text] In connection with the violation of safety rules and conditions in the use of nuclear power installations, the nuclear weapons complex, and radioactive sources which pose a threat to the lives, health, and well-being of the population and the state of the environment, and also in connection with the accident at the Siberian chemical combine (Tomsk-7) on 6 April 1993, a directive of Russian Federation President B. Yeltsin instructs:

The Russian Federation Government is to adopt comprehensive measures to provide state extra-departmental monitoring [kontrol] of the safe operation of enterprises using nuclear installations for civilian and defense purposes; to accelerate the ratification and the practical implementation of the Concept for the Protection of the Population and Economic Activity on Territories Subjected to Radioactive Contamination; and to issue instructions on improving the legislative base for the social protection of citizens subjected to the effects of radiation in the accident at the Chernobyl nuclear electric power station and other radiation accidents, and on establishing the legal status and ensuring the rehabilitation of territories polluted by radioactivity.

By 1 December 1993, the Russian State Committee for the Supervision of Nuclear and Radiation Safety is to carry out an inspection of enterprises, organizations, and military units of the Russian Ministry of Atomic Energy, the Russian Committee for the Defense Industry, and the Russian Defense Ministry, with the aim of checking the provision of nuclear and radiation safety, as well as their physical protection.

Corresponding instructions have been issued to the Russian Ministry of the Use of Nature and Environmental Protection, the Russian Hydrometeorology Committee, the Russian State Committee for Affairs of Civil Defense, Emergency Situations, and Elimination of Natural Disasters, the State Committee on Social Protection of the Citizens and Rehabilitation of the Territories Damaged by Chernobyl and Other Regional Catastrophes, and the Tomsk Oblast Administration.

All organs of state executive power and the mass media have been instructed to pay attention to the need for the unconditional provision to the population of timely, full, and reliable information concerning industrial accidents and their consequences.

Tomsk-7: IAEA Authorities Give Tomsk-7 Accident Site All Clear

*LD1604193993 Moscow ITAR-TASS in English
1736 GMT 16 Apr 93*

[By ITAR-TASS correspondent Veronika Romanenkova]

[Text] Moscow April 16 TASS—Experts from the International Atomic Energy Agency (IAEA) fully agreed with Russian experts on the absence of radiation-ecological aftermath of the Siberian chemical plant accident in Tomsk-7.

The expert team left for Vienna, where the IAEA headquarters is located, today, sources at the Russian Nuclear Power Engineering Ministry's information and public relations department told ITAR-TASS.

Draft Law on Handling of Radioactive Waste Adopted

*LD1604220393 Moscow ITAR-TASS in English
1911 GMT 16 Apr 93*

[By ITAR-TASS correspondent Lyudmila Yermakova]

[Text] Moscow April 16 TASS—The Russian Supreme Soviet has adopted in the first reading the draft law “on state policy on radioactive waste handling”.

Deputies are sure uncontrolled accumulation of radioactive substances in various sphere of human activities requires “legislative regulation of relations in provision of safety at all stages of waste handling”.

Member of the parliamentary committee for ecology and rational use of natural resources, which works on the draft law, Yevgeniy Nesterov noted the draft provides for essentially new norms, including the division of competence between state power and management bodies in the sphere of waste handling, the creation of a federal body to handle the waste, ban on burial of any kind of waste in rivers, lakes, seas and other water systems, and ban on burial of highly active liquid waste.

The draft takes into account remarks of 18 standing commissions and committees of the Russian Parliament, 15 republican, territorial, regional and district councils of people's deputies and over 50 ministries and departments.

Government Approves Program for Urals Radioactive Victims

LD1704085693 Moscow Ostankino Television First Channel Network in Russian 1700 GMT 16 Apr 93

[From the “Novosti” newscast]

[Text] The Russian Government has adopted a state program on measures to rehabilitate the Urals region from radiation and assist the stricken population in the period to 1995.

[Correspondent Sergey Sergeyev in Chelyabinsk] This is Lake (Erechay), the globe's most terrible storage area for long-life radio-nuclides. There are more than 120 million curies of them, which is the equivalent of two and a half Chernobyls. [video shows lake and forest affected by radiation]

There is no other such atomic reserve in the world. It is situated in the territory stricken by the explosion at the Mayak chemical combine in 1957. At the time a lethal radioactive cloud covered forest, fields, and dozens of hamlets.

This is the River Techa. The atomic workers dumped radioactive waste in it which contaminated the water, and tens of thousands of inhabitants of the villages along its banks were subjected to radiation. [video shows close-up of river]

For many years these facts were hushed up, but the people affected by the activities of the atomic combine have been ill and have been dying. Now at last the Russian Government has approved a state program to assist the victims of the Urals Chernobyl. [video shows patients in hospital]

[Begin recording] [V. Fetisov, director of the Mayak production association and Russian people's deputy—identified by caption] The program has several sections. The main sections deal with the state of the population's health, provisions for the population's health, and the provision of hospitals, schools, medicines, housing, and roads, that is to say, everything termed infrastructure. They also include matters relating to the monitoring of the ecological situation in the region. [end recording]

[Sergeyev] But the question is whether this program remains just on paper. After all its implementation will require billions of rubles.

Dep Premier on Nuclear Waste Disposal, Army Undermanning

PM1904112593 Moscow KRASNAYA ZVEZDA in Russian 16 Apr 93 p 2

[Vladimir Gundarov report: "Vice Premier on the Problems of Russia's Army and Navy"]

[Text] On 14 April Vice Premier Georgiy Khizha made a short business visit to Murmansk.

Replying to questions from KRASNAYA ZVEZDA's correspondent, the vice premier noted the pressing nature of the problem of recycling and burying radioactive waste. In particular, he said:

"The funding of the construction of a regional burial site for radioactive waste in Novaya Zemlya has not yet been settled. But we will study this problem and try to 'get things moving.'"

Georgiy Khizha also announced that the contingent of young men drafted into the Army and Navy needs to be expanded in view of the considerable shortfalls in soldiers and sailors conscripted into military units. Some youths of induction age will lose the right to deferment of the draft or to exemption from service in the Armed Forces.

Greenpeace Reveals Localized Spots of Higher Radiation

LD1504224993 Moscow Ostankino Television First Channel Network in Russian 1700 GMT 15 Apr 93

[Report by A. Zarayelyan, from the "Novosti" newscast]

[Text] At a press conference in Moscow today eyewitnesses from the international Greenpeace movement spoke about the results of their trip to Tomsk-7.

[Zarayelyan] Perhaps the main theme throughout the news conference was that in this country the work of Green movement activists is incomparably more difficult than anywhere else around the globe. The practice in this country of hushing up the truth, which came into being several decades ago, remains unchanged despite all the declarations and even instructions by Boris Yeltsin, according to Dmitriy Tolmatskiy, Greenpeace's Moscow organizer, who has just returned from the site of the incident in Tomsk. [video shows moscow news conference]

[Begin recording Yevgeniy Mikerin, head of the Russian atomic energy ministry's main scientific-technical directorate] The individual may rest assured. Even in the areas where traces of contamination have been discovered people can plant potatoes, gather in their harvest and gather all kinds of berries. [end recording]

[Zarayelyan] Do the figures from the independent examination by experts two or three days ago differ from the official finding which was made public in the mass media?

[Begin recording Lidiya Popova, independent expert and the ecological programs center's specialist] I think that they do because as always the official findings are quoting average figures. First, in respect of gamma radiation alone it is said that the level is 18-35 microroentgens per hour, twice the background radiation level. In actual fact the independent research shows that there are localized spots of half a meter by half a meter where the gamma contamination reaches 15,000 microroentgens per hour. Snow thawing is proceeding very rapidly there at present. The radiation will be washed away and will enter the hydrographic system. Following the thaw there will be spring floods and the spread [of radiation] will be the same as after the Chernobyl catastrophe. [end recording] [video shows Popova answering question; Greenpeace footage from Tomsk]

'Secret' CPSU Documents Cast New Doubt on Reactor Safety

93WN0381B Moscow IZVESTIYA in Russian 17 Apr 93 p 1,5

[Article by Alla Yaroshinskaya: "The Secret Office of the CPSU Central Committee on Chernobyl: The First Secret Documents Being Published Call Into Question the Future of Nuclear Power Engineering in Russia"]

[Text] New secret documents of the CPSU Central Committee call into question the conception of the development of nuclear power engineering in Russia.

Still recently it seemed that almost everything was already known about the Chernobyl catastrophe. Especially after the declassification of the documents of the operational group of the Politburo of the CPSU Central

Committee, headed by Nikolay Ryzhkov. The dimensions of radioactive pollution were more precisely determined not only in the republics of the former USSR, but also in the neighboring countries. There were legal proceedings even in Bulgaria. By decision of the court, the culprits of the explosion—the director of the Chernobyl Nuclear Power Station, Bryukhanov, and the deputy chief engineer, Dyatlov, were released from jail. The terrifying figures of cancer diseases in Belarus by Stanislav Shushkevich were made public. The whole world learned about the criminal prescriptions of the CPSU Central Committee for the use of radioactive meat and milk. Those who suppressed the dimensions and consequences of the explosion received not only the Order of Lenin, but even international awards. (As the former chairman of the State Committee for Hydrometeorology, Yuriy Izrael).

The official data on the participation of the army in the liquidation of the accident were vastly understated—during 6 months in 1986 alone, about 100,000 officers and soldiers were irradiated. Another lie has “come out into the open”—about a new watch [vakhtovyy] village for the power industry workers of Chernobyl—Zelenyy Mys. In my archive there are notes of the late General Akhromeyev, adviser to Gorbachev, addressed to the operational group of the Politburo. The first states that it is possible to build a guard town for the power industry workers in the proposed location. And the second—written after some time—of completely different content. However, they built it. Like Slavutich—on soil containing cesium.

So here, it seemed, that already the whole lie around Chernobyl piled up by the powers that be had been exposed. You know, 7 years have passed. But here are new, top secret documents of the sessions of the Politburo of the CPSU Central Committee, with the note: “Only Copy.” One of the protocols, dated 3 June 1986, throws light on what for decades was “taboo” not only for journalists and the public, but even for “uninitiated” scientists: The safety of Soviet reactors. And not only of the sadly famous RBMK-1000 reactors (of the Chernobyl type), but also of the remaining ones that are being operated to this day both in Russia, in other states that arose from the ashes of the USSR and in the countries of our former “brothers.”

Clan Interest

After the First Congress of People's Deputies of the USSR, a group of parliamentarians—myself included—turned to the USSR Procurator General, Aleksandr Sukharev, with the request to institute criminal proceedings against the officials who prevented publicity about consequences of the accident, who consciously concealed information, condemning people living in the zones of radioactive pollution to silent death. In December 1989 we received a reply from the deputy general procurator of the USSR, V. Andreyev. It was the usual formal reply, in which only the institution of criminal proceedings against the directors of the Chernobyl Nuclear Power

Station was reported. (As if we did not know about this!). The letter also stated that the criminal case concerning the structural design reliability of the RBMK reactors, singled out in a separate legal proceeding, “has been terminated, i. e., the accident was the result of numerous violations of the safety rules for the operation of reactor installations . . .”

The Chernobyl Commission of the USSR Supreme Soviet, after having shaken off the radioactive dust at the end of 1990 (the “case” actually radiates to this day), brought to light interesting testimony of experts. I will cite only one example: “Question: Were the structural design features of the reactor a factor in the development of the accident? Answer: Yes, they were a factor.” This is also indicated in the report of the government commission: “The development of the accident that led to the destruction of the reactor occurred because of defects in the design of the reactor. . . . The immediate cause of the initial increase in radioactivity was the beginning of the boiling of the water in the active zone. . . . In this initial increase of radioactivity the defect in the design of the reactor is manifested: A positive steam effect, caused by the structure of the active zone.

The initial increase in radioactivity was not suppressed in the beginning stage of the movement of the SUZ (control and safety system—A. Ya.) rod after activating the accident protection of the reactor. The second defect in the reactors' design was manifested in this—the unsuccessful design of the control and safety system rods.”

Nevertheless the case regarding the structural design reliability of the RBMK-1000 type reactor was closed. This signified that all blame for the accident fell exclusively on the personnel. The court, as it were, placed the reactor outside of any suspicion, not having paid attention to important documents pertaining to its structural design reliability, of which there were more than enough both before and after the accident in order for them “not to be noticed.”

Half a year before the accident at the Chernobyl Nuclear Power Plant a specialist from the Kursk Nuclear Power Plant (there they also have RBMK-1000 reactors), Aleksandr Yadrikhinskiy, sent a letter to the Administration for Supervision in Nuclear Power Engineering of the USSR State Committee for the Supervision of Safe Working Practices in Industry and Mine Supervision under the USSR Council of Ministers (Gosatomenergonaadzor) and warned about the danger of these reactors. He wrote about the necessity of an independent examination by experts and the redesign of the very control and safety system (!) that in Chernobyl became one of the reasons for the explosion. No one in the “center” took his warning seriously.

Already after the accident, on 1 May, 1986, V. P. Volkov, the head of the Group for the Reliability and Safety of Nuclear Power Stations, addressed the director of the Institute of Atomic Energy imeni Kurchatov in a

memorandum stating that it "was caused not by the action of the service personnel, but by the design of the active zone and an incorrect understanding of the neutron and physical processes taking place in it." On 9 May, 1986, he also sent such a letter to the leaders of the country.

On May 5, 1986, an interdepartmental committee called attention to the design defects of the RBMK-1000 reactor.

Approximately at this time, a group of specialists of the USSR Ministry of Power and Electrification sent an appendix to the investigation file dealing with the design defects of the reactor.

As they say, what more did they want?

But not one of the arguments produced action. Practically all the reasons for the accident were reduced exclusively to mistakes made by the personnel. This position also became the official position of the USSR Government in the international arena. Above all, in the International Atomic Energy Agency (IAEA).

In the answer of the Institute of Atomic Energy imeni Kurchatov, which was confirmed already after the report for the IAEA, it is indicated that "the initial cause of the accident was an extremely unlikely combination of violations of the operational procedure and routine allowed by the personnel of the power-generating unit, *during which design defects in the control and safety system rods manifested themselves.*" The words I have italicized are missing in the official reports presented by the USSR at the conferences of IAEA experts in 1986 and 1987. As they say, there is truth for domestic consumption, and truth for export.

But could it be otherwise? Could the "expert" on the RBMK reactor, Academician Aleksandrov, act against the "father" of the RBMK reactor, Academician Aleksandrov?

On 17 May, 1989, LITERATURNAYA GAZETA published material by the political observer Igor Belyayev "Along this Road?" His interlocutor, V. Bobrov, acting chief of the Laboratory for State Review of Inventions of the Central Scientific Research Institute for Information and Technical-Economic Research on Nuclear Science and Technology tells why the RBMK-1000 reactor was not registered as an invention. At that time, the director of the Institute of Atomic Energy, Academician A. Aleksandrov, and other staff members of the institute acted as the authors of the application. "In 1967," says V. Bobrov, "I returned to the authors the first variant of the application (one and a half pages of typed text, without a formula of the invention and blueprints) for reregistration. Then something improbable happened. The reregistration of the application for the RBMK, dated 6 October 1967, had not yet been reviewed, when already only a month later, on 10 November 1967, Academician A. Aleksandrov announced in the newspaper PRAVDA (in the article "October and Physics") "that Soviet scientists had succeeded in solving the task of increasing the economic efficiency of nuclear power

plants." . . . One of the reasons for not acknowledging the design as an invention was the lack of industrial usefulness of the method of lowering the cost of electric power through the use of RBMK reactors with antediluvian KPD [efficiency factors]—only about 30 percent. Precisely this reason for the refusal was disputed by the applicant, demanding the recognition of his "invention" after its [the RBMK-1000 reactor's—A.Ya.] powerful introduction into nuclear power engineering in 1973."

I will recall: This "introduction" began with the Lenin-grad Nuclear Power Plant, where accidents take place periodically. Nothing could stop Aleksandrov and his colleagues on the road to Chernobyl—not even the refusal of the State Patent Experts to recognize the "advanced technical level" of the reactor as an invention in the USSR. The national economy of the country was doomed: For the next five-year plan (1971-1975), two-thirds of the capacities of nuclear power plants were planned precisely with these reactors.

Such are the origins of the worldwide lie about the special reliability of our reactors.

"The Safety of Reactors Should Be Secured Through Physics, and Not Through Organizational and Technical Measures"

This phrase in the polemic with Academician Aleksandrov was dropped by the chief of Gosatomenergonadzor, Ye. Kulov, who was invited to a session of the Politburo of the CPSU Central Committee.

"Top Secret. Only Copy. (Working Record). Session of the Politburo of the CPSU Central Committee, 3 July 1986. Chaired by comrade M. S. Gorbachev. Present: Comrades G. A. Aliyev, V. I. Vorotnikov, A. A. Gromyko, L. N. Zaykov, Ye. K. Ligachev, N. I. Ryzhkov, M. S. Solomentsev, V. V. Shcherbitskiy, P. N. Demichev, V. I. Dolgikh, N. N. Slyunkov, S. L. Sokolov, A. P. Biryukova, A. F. Dobrynin, B. P. Nikonov, and I. V. Kapitonov.

1. Report of the Government Commission for Investigation of the Reasons for the Accident at the Chernobyl Nuclear Power Plant on 26 April 1993.

GORBACHEV. (. .) Comrade Shcherbina has the floor.

B. Ye. SHCHERBINA. (Deputy Chairman of the USSR Council of Ministers). (. .) The accident occurred as the result of the most flagrant violations by the operating personnel of the technical regulations and in connection with serious defects in the design of the reactor. But these reasons are ambiguous. The initial event that triggered the accident is believed to be the mistakes of the operating personnel."

As we see, a familiar song. But further, already as if refuting himself, the speaker said:

"(. .) Assessing the operating reliability of the RBMK reactor, a group of specialists working on behalf of the commission came to the conclusion of the non-conformity of its characteristics to contemporary

requirements of safety. In their conclusion it is stated that in the conduct of an expert examination at the international level, the reactor will be "ostracized". The RBMK reactors are potentially dangerous.

(. . .) Evidently, all were affected by the persistently advertised allegedly high safety of nuclear power plants (. . .). The difficult decision should be made to put a stop to the construction of new nuclear power plants with RBMK reactors (. . .).

The collegium of the Ministry (of Power and Electrification—A. Ya.) since 1983 has not once discussed questions related to the safety of nuclear power plants.

(. . .) During the 11th Five-Year Plan, 1,042 accidental stoppages of the power-generating units at power plants were allowed to happen, including 381 at nuclear power plants with RBMK reactors. At the Chernobyl Nuclear Power Plant there were 104 such cases, of them 35—due to the fault of the personnel."

After the report of the chairman of the commission, a Central Committee "sorting out" of the reliability of the reactor took place. And it did throw light on unexpected secrets of the Soviet reactor "court" [dvor] little known to anyone.

"GORBACHEV: The commission looked into why the inadequate reactor was handed over to industry. In the United States this type of reactor was rejected. Is that so, comrade Legasov?

LEGASOV: In the United States they did not develop and did not use such reactors in power engineering.

GORBACHEV: The reactor was turned over to industry, but the theoretical research was not continued. . . . Does it not turn out that the voluntarism of some people involves the country in an adventure? (. . .) Who introduced the proposal to locate nuclear power plants near cities? Whose recommendations were these? (. . .) Incidentally, the Americans, after the accident that took place in their country in 1979, did not start the construction of new nuclear power plants.

SHCHERBINA: It was considered that the question of safety is resolved. This is stated in a publication of the Institute imeni Kurchatov, in whose preparation Legasov also took part. (. . .)

GORBACHEV: How many accidents have there been?

BRYUKHANOV (director of the Chernobyl Nuclear Power Plant—A. Ya.): There are approximately 1-2 accidents a year. . . . We did not know that there was something similar in 1973 at the Leningrad Nuclear Power Plant.

GORBACHEV: There were 104 accidents, who bears responsibility? (. . .) What can you say about the RBMK reactor?

MESHKOV (first deputy minister of medium machine building): The reactor is tested. Only there is no cupola. (Let us remember this, reader?—A. Ya.) If the regulations are strictly carried out, there is no danger.

GORBACHEV: Then why did you sign a document to the effect that its production should be terminated? (. . .) You surprise me. All are saying that this reactor is not finished, that its operation may cause danger, and you here defend the honor of the uniform.

LIGACHEV: There is world power engineering. Why is it taking the road of building reactors of a different type?

GORBACHEV: . . . It [the reactor—A. Ya.] is the least studied. Is that so, comrade Legasov?

LEGASOV: Yes, that is so.

GORBACHEV: B. A. Sidorenko (one of the heads of USSR Gosatomenergonadzor—A. Ya.) writes that the RBMK, even after reconstruction, will not meet international requirements. (. . .)

G.A. SHASHARIN (USSR deputy minister of power and electrification): The physics of the reactor determined the scale of the accident. People did not know that the reactor may gather speed in such a situation. There is no conviction that its revision will make it completely safe. One can select a dozen situations in which the same thing will happen that happened in Chernobyl. This pertains particularly to the first power-generating units of the Leningrad, Kursk, and Chernobyl nuclear power plants. The Ignalina Nuclear Power Plant cannot be operated on the existing capacities. They do not have a cooling off system in case of an accident. They should be shut down first of all. (. . .) It is impossible to go on building RBMK reactors, I am convinced of this. As far as their improvement is concerned, the expenditures for this do not justify themselves. The philosophy of extending the resource of nuclear power plants is by no means always justified.

GORBACHEV: But can these reactors be brought up to international requirements?

ALEKSANDROV: (. . .) All countries with developed nuclear power engineering are working on the type of reactors which are used in our country."

But you know already on 28 December 1984 (!), by decision of the interdepartmental scientific-technical council for nuclear power engineering, proposals of expert commissions were approved in regard to bringing the existing RBMK-1000 power-generating units in conformity with the requirements of the normative documents with respect to safety.

"(. . .) MAYORETS (member of the government commission): As far as the RBMK reactor is concerned, this

question can be answered unequivocally. No one in the world proceeded along this path in the creation of reactors of this type (. . .) I assert that, even after revision, the RBMK will not meet all of our present rules. (. . .)

RYZHKOY: We have come to an accident. If the accident would not have happened now, it could have happened at any time, given the situation that has developed. . . . As has now become known, there has not been a year without an accident in the nuclear power plants. (. . .) Also known were the defects in the design of the RBMK reactor, but the corresponding conclusion were not drawn either by the ministries or by the Academy of Sciences.

(. . .) The operative group believes that the plants with a large amount of construction already finished with RBMK reactors should be completed, and with this the construction of plants with this reactor should be terminated."

Such were the assessments of the specialists and the participants of the top secret session of the Politburo of the CPSU Central Committee on the reliability of the RBMK reactor. Dozens of commissions and scientists presented evidence about its unreliability. And what of it?

A year after Chernobyl, two more power-generating units with RBMK-1000 reactors were put into operation: The third of the Smolensk Nuclear Power Plant and the second of the Ignalina Nuclear Power Plant. . . .

Judging by the shorthand report of the session of the Politburo of the CPSU Central Committee, Mikhail Gorbachev, a lawyer by education, and General Secretary, proved to be the most meticulous expert on all of our reactors, including the "good ones"—of the VVER type I am convinced: We would never have found out about this, had it not been for August -91. You see, even the Politburo members Gromyko and Solomentsev themselves indignantly said at the session that for the first time they heard such revelations about our reactor construction.

"(. . .) GORBACHEV: How many times did you in Gosatomenergonadzor return to the problem of this reactor? (RBMK—A. Ya.)

KULOV: During the 3 years of my work, I did not hear the question in such a formulation as is being done now. We were more concentrated on the VVER-1000. Their generating-units are less controlled. Not a year passed that there was not an accident at a VVER.

GORBACHEV: What is your view about Sidorenko's declaration that in the world there is no experience in the use of RBMK-type reactors, that our VVER and RBMK reactors do not meet international norms and that, if there is an international inspection, it is better to go to a VVER than to a RBMK?

KULOV: The VVER possesses certain advantages, but its operation is connected with dangers.

GORBACHEV: Why, in your opinion, it turns out that the VVER, too, should be banned? Why did you not report that the VVER should not be built?

KULOV: The VVER is better than the RBMK, but the VVER-1000 series is worse than the ones that were installed in the first power-generating units.

DOLGIKH: The VVER-1000 has been developed in accordance with contemporary norms?

KULOV: Yes, but the VVER-1000 being built are worse than the old ones."

You understand, reader, if the VVER-type reactors being built are "worse than the old ones", then why do they build them? Who decided this and why?

"(. . .) MAYORETS: The VVER-1000 reactor is new, it corresponds to the most recent safety requirements, but it is unreliable in operation since the instruments are going out of service."

"You Prefer Which Reactor?"

This question from the secret protocol amazed me almost most of all. It was posed by N. Slyunkov, member of the Politburo of the CPSU Central Committee, to G. Shasharin, USSR deputy minister of power and electrification. To which Shasharin replied: "The VVER." Thank God, that Slyunkov did not start to tell the deputy minister which reactors the Politburo of the Central Committee of the Belorussian Communist Party "prefers."

And today, 7 years after the Chernobyl catastrophe, little has changed in the power engineering of the independent states of the former USSR: All the same RBMK and VVER reactors are being operated there. The Ignalina Nuclear Power Plant with RBMK reactors, which was shut down when there was the hated "center" at the request of the Baltic patriots, has again been put into operation. The president of Armenia, Ter-Petrosyan, is also talking about the soonest possible introduction of the Armenian Nuclear Power Plant, in spite of the fact that it stands on seismic breaks. The shortage of electric power has forced people to forget even about this. In spite of the fact that the parliament of Ukraine adopted a decision to close the Chernobyl Nuclear Power Plant in 1993, at the end of last year the 2nd and the first of its power-generating units were again put into operation. Not long ago, the chairman of the Supreme Soviet of Belarus, S. Shushkevich, announced the necessity of building two nuclear power plants.

But nuclear power engineering in Russia today is developing especially actively. On 26 March 1992, Yegor Gaydar, then the head of the government, signed a directive about the resumption of the construction of nuclear power plants on the territory of the country. Without the publication of any analysis of the state of

nuclear reactors, without an explanation to the public of the necessity of such a decision. Moreover, even in spite of the fact that in 1991, on the eve of the trip of President B. Yeltsin to the United States, the Academy of Sciences recommended the closing of the majority of the Russian nuclear power plants, taking into account world requirements for their safety. The "black" list included the Leningrad, Bilibino, Kursk, Beloyarsk, and Smolensk nuclear power stations, as well as 2 generating-units of the Kola, and 2 generating-units of the Novovoronezh nuclear power stations. It was recommended to phase out the dangerous reactors in the course of 10 years. Only 2 power plants out of 9, it was concluded in the Russian Academy of Sciences, can fully meet the safety requirements.

Gaydar's directive became the first step toward the increase of efforts of the nuclear lobby to pour fresh blood into an industry which, in essence, had blown up 7 years before together with the Chernobyl reactor. Today the Phoenix is rising, shaking the radioactive ashes from its wings.

On 28 December of last year, a decree of the government of Russia "Questions of the Construction of Nuclear Power Plants on the Territory of the Russian Federation" came out. Plans call for the introduction of 33 new power-generating units of nuclear power plants and nuclear heat supply plants. It is proposed to locate 19 of them in the Central, North-Western and Black Earth zones of Russia. These are densely-populated regions with gas and oil pipelines to the CIS countries and the Baltic. Among the nuclear reactors being introduced are our old acquaintances—the RBMK's.

In "Conception of the Development of Nuclear Power Engineering in the Russian Federation," approved by the collegium of the RF Ministry of Atomic Energy on 14 June 1992, considerable space is devoted to the safety of nuclear power plants, which should be brought up "to a level that excludes the possibility of a serious accident with the passage of fission products into the environment." We are talking both about the existing nuclear power plants and about their new generations. But is this possible in principle—to attain the maximum possible level of safety of precisely these types of reactors? Most likely, many will remember the tragic death of Academician Valeriy Legasov, who took part in the liquidation of the consequences of the accident at the Chernobyl Nuclear Power Plant, and then committed suicide on the morning after the second anniversary of the accident. At that top secret session of the Politburo of the CPSU Central Committee, V. Legasov told Gorbachev:

"The RBMK reactor in terms of some positions does not meet international and domestic requirements. There is no protection system, no system of radiation monitoring, and there is no external cap. We, of course, are at fault for not keeping an eye on this reactor. . . . This is where I am at fault, too. . . . This pertains also to the first VVER

power-generating units. Fourteen of them also do not conform to contemporary and domestic safety requirements."

After 2 years, not long before his death, Valeriy Legasov, being recorded for the documentary film "Zvezda Polyn" [Polynia Star], said more: "Any approach to securing nuclear safety . . . consists of three elements. The first element is to make the object itself, well, in this case, let us say, the nuclear reactor—maximally safe. The second element is to make the operation of this object extremely reliable, but the word "extremely" cannot signify 100-percent reliability. A philosophy of safety requires without fail the introduction of the third element, which allows for the eventuality that an accident nevertheless happens and radioactive or some chemical substances appear outside the apparatus. And it is for this case that wrapping the dangerous object into what is called a container is obligatory. . . . And here in Soviet power engineering the third element, in my view, was criminally ignored. If there had been a philosophy connected with the obligatory nature of the containment of each one of the nuclear reactors, then, naturally, the RBMK in terms of its geometry as an apparatus simply could not have appeared. The fact of the appearance of this apparatus from the standpoint of international and in general normal standards was illegal, but, besides this, three enormous design errors were allowed inside the apparatus.

. . . "But the main reason is the violation of the basic principle of securing the safety of such apparatus—the placing of the dangerous apparatus in the kind of capsules that limit the possibility of radioactivity getting outside the power plant itself, outside the apparatus itself.

And here is the very place and time to remember that, as Legasov, Izrael, and other scientists asserted, it was not the Chernobyl accident that was the biggest one in the world. The world's biggest accident at a nuclear power plant occurred long before Chernobyl—in 1979 at "Three-Mile Island", in the United States. But there the reactor was under a cap. The accident occurred under the cap. The cap cracked, but very little radioactivity escaped to the external environment. Since that time, the United States has not built a single nuclear power plant. Even with a reliable cap.

In the new "Conception of the Development of Power Engineering" it is noted that on 1 July, 1992, in Russia "there are in operation 28 industrial power-generating units at 9 nuclear power stations . . . including 12 power-generating units with water-cooled shell-type reactors of the VVER type, 15 power-generating units with uranium-graphite pressure tube reactors (11 RBMK-1000 power-generating units and 4 EGP power-generating units), and one power-generating unit with a fast reactor." It was about them, it turns out, that 5 years ago Valeriy Legasov, before his unexplained death, said: "It is necessary to think about some special measures to localize accidents of these 28 apparatuses, since it is

economically and technically not possible to build caps over them" (my emphasis—A. Ya.).

This means: Whatever scientists did, whatever safety measures were undertaken by them, (and, indeed, quite a lot was done for the safety of the RBMK's after the accident at Chernobyl), the main reason for the danger of the existing power-generating units in Russia cannot be eliminated. And in this lies the tragedy of the power engineering industry in our country, which selected in its development a, from the very beginning, fallacious road. This problem "must today be pondered—mainly by Soviet society, because this problem is ours. . .," said Legasov before his death. He also asserted at the top secret session of the Politburo in the summer of 1986 that "the weak place of the RBMK has been known for 15 years."

But there is also another opinion about this. At the same session of the Politburo, Academician Aleksandrov dropped the remark: "A cap would only have aggravated the accident." Other scientists believe that "no one knows this." Thus, on the one hand, a cap over the RBMK is technically impossible, on the other—even if it were possible, let us say, it would aggravate an accident even more. However, persistently, five-year plan after five-year plan, it is precisely these dangerous power-generating units that have been implanted in our national economy by the physicists that have come to power.

Here it is already the second year that we are living without the Politburo and without the CPSU Central Committee. We have the conclusions of dozens of competent commissions and groups of scientists about the reasons for the explosion at the Chernobyl Nuclear Power Plant that are concealed in the very reactor. Including the authoritative diagnosis made already in 1990 by a commission of Gospromatomnadzor SSSR [USSR State Committee for Safety in Industry and Atomic Power Industry], headed by the well-known scientist N. Shteynberg. "The defects in the design of the RBMK-1000 reactor that was operated at the fourth power-generating unit of the Chernobyl Nuclear Power Station predetermined the serious consequences of the accident." But one cannot observe changes in the approach to the matter—although we are talking about Life. And where should they come from, if many of those who led us to Chernobyl have practically not even changed their chairs.

Their names and faces are familiar. (And not only in Russia). In the beginning they lied to us about the reasons and consequences of the accident at Chernobyl, they took decisions about the construction of homes for the people resettled in dangerous zones, then, knowing about the real reasons for the accident, they piled the whole blame on the personnel of the power plant, and now—we are once again being ruled by them, as before. Making use of the lack of information of the broad public, they are creating irresponsible plans for the

"atomization" of poor Russia through reactors whose danger cannot be eliminated in terms of design.

Aleksey Yablokov, adviser to the president of Russia, in commenting on the new conception of the development of nuclear power engineering, said that "this is unacceptable from legal, ecological, economic and political points of view."

On the eve of every Chernobyl anniversary, the Politburo of the CPSU Central Committee developed a "Plan to Forestall Counter-Propagandistic Actions." (On the eve of the first anniversary, Mr Fadin, who in 1987 headed the Novosti Press Agency, offered his services especially zealously, fearing "possible attempts of subversive centers of imperialism to utilize the anniversary of the accident at the Chernobyl Nuclear Power Plant for the development of the next large-scale anti-Soviet campaign" (appendix to the top secret protocol of the Secretariat of the CPSU Central Committee No 42, date 26 February, 1987). The correction of the "plan" was carried out personally by Yegor Kuzmich Ligachev. For the planned lie of 10 April, 1987, voted, as always, unanimously, in the Secretariat of the CPSU Central Committee (Top Secret Protocol No 46): ". . . Voted: Comrades Gorbachev—aye, Aliyev—aye, Vorotnikov—aye, Gromyko—aye, Zaykov—on vacation, Ligachev—aye, Ryzhkov—aye, Solomentsev—aye, Chebrikov—aye, Shevardnadze—aye, Shcherbitskiy—aye."

"Aye" was always 100 percent. In spite of the fact that, at their top secret meetings, it turns out, they openly called the consequences of the accident in Chernobyl "the consequences of a small war" (Gromyko), comparable to the "use of weapons of mass destruction" (M. Gorbachev, S. Sokolov). But only the "priests" were supposed to know this. They convinced the common people that "the health of people is not threatened by anything."

Does the new "Conception of the Development of Nuclear Power Engineering" of the RF Ministry of Atomic Energy not resemble the original "plan to forestall counter-propagandistic actions?" But if this is so, then life on Earth with the reactor is possible only if there is a "cap" over every person. If this is life.

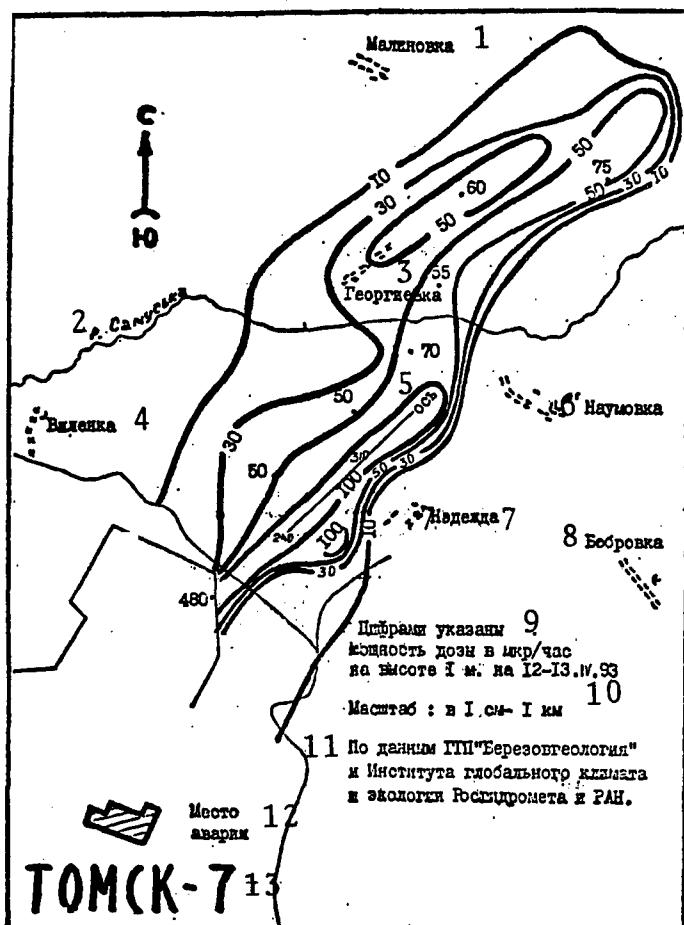
Tomsk-7: Graphic Portrays Distribution of Radiation

93WN0392A Moscow ROSSIYSKAYA GAZETA
in Russian 20 Apr 93 p 5

[Report by the ROSSIYSKAYA GAZETA Ecology and Health Section: "Tomsk-7: New Details"]

[Text] A great many internal as well as independent experts are working today in the region of the accident at the Tomsk Radiochemical Plant. But apparently the schematic we present here is the most accurate and detailed of all to which the general public has access.

Pay attention to the fact that the lower left corner of the diagram is effectively bare. This is the territory of



Key:—1. Malinovka—2. Samuska River—3. Georgiyevka—4. Vilenka—5. axis—6. Naumovka—7. Nadezhda—8. Bobrovka—9. Figures indicate dosage strength in microroentgens per hour, at height of 1 meter, as of 12-13 Apr 93—10. Scale: 1 cm = 1 km—11. According to data from the Berezovgeologiya GGP [expansion unknown] and Institute of Global Climate and Ecology of the Russian Hydrometeorology Institute and Russian Academy of Sciences—12. Accident site—13. TOMSK-7

Tomsk-7 to which a team of the Institute of Global Climate and Ecology, like most other experts, have simply been denied access.

An An-2 aircraft outfitted with gamma spectrometer took measurements at an altitude of 50-75 meters. It moved across the radioactive trace flying routes every 1-2 kilometers. The routes were 20 kilometers long. This enabled a survey to be conducted of approximately three times the area of the contaminated territory.

Specialists of the Institute of Global Climate and Ecology commented upon the results of the survey in this manner: Contamination of terrain with gamma-emitting radionuclides outside the work site of the combine took place over a territory of about 100 square kilometers. Isolines indicate the strength of the gamma radiation dosage (in microroentgens per hour), calculated for a height of one meter. For comparison purposes, the level

of background radiation on the territory of Russia usually is about five-12 microroentgens per hour. In addition, discrete points of increased local contamination were discovered. These are indicated by separate figures. The majority of population centers were found to lie outside the radioactive trace, as we can see. Judging from previous official reports, this is related to a favorable wind direction at the moment of the accident.

Samples of snow selected by the West Siberia Department of the Russian Hydrometeorology Directorate show mainly zirconium-95, niobium-95, and ruthenium-103 and -106. The half-life here is from 35 to 65 days, except for ruthenium-106, the half-life of which is about a year.

Scientists and specialists are continuing their detailed study of the radioactive contamination. More than anything else, of course, society is disturbed by the question of

the presence of long-lived plutonium. It is assumed for the time being that not more than half a kilogram of it—approximately 20 curies—could have fallen out. But this will be more accurately ascertained by further investigation.

Foreign Ministry Distributes Yablokov Commission Report Abroad

93WN0381A Moscow *IZVESTIYA* in Russian
20 Apr 93 p 7

[Article by Sergey Leskov, correspondent of *IZVESTIYA*, datelined Chicago: "The USSR Secretly Dumped Radioactive Waste in the Sea: Russia Has Condemned This Practice, But Is Compelled to Continue It. . . ."]

[Text] The Russian Ministry of Foreign Affairs, on the instruction of president B. Yeltsin, started to distribute a sensational report to the world community, which is devoted to the problem of the burial of radioactive wastes in the sea, carried out for decades in strict secrecy by the former USSR.

The Greens Take Aim at Novaya Zemlya

In October 1992, a research ship of the international organization "Greenpeace" entered the Kara Sea, but was detained by border guards and was under arrest for 9 days in Murmansk. The official version treated the incident as a violation of the state border by environmentalists inclined toward anarchy. And their ideas—as not having any serious foundations. In spite of all obstacles, in November 1992, "Greenpeace" nevertheless presented data on incidents of the dumping of radioactive waste in northern seas by the former USSR and even composed a map of these burials.

These data radically contradicted the official position of the USSR, which was repeatedly formulated even during the epoch of "Gorbachev" glasnost: The Soviet Union has not carried out, does not now carry out, and does not plan in the future to carry out the dumping of radioactive materials in the sea. In 1985, in accordance with this version, the USSR sent a "zero report" to the secretariat of the International Maritime Organization. Even in 1989 the USSR confirmed this position when it filled out a circular questionnaire of the IAEA [International Atomic Energy Agency].

In short, it is not at all surprising that the report now distributed in the West, which reports many unknown facts and for the first time officially recognizes that the USSR on a large scale practiced the dumping of radioactive wastes in oceans, called forth increased interest. The work of the commission, created on the order of president B. Yeltsin, was directed by his adviser, Professor Aleksey Yablokov. The Commission included the heads of all interested departments, including the ministries of defense, atomic energy, security, and foreign affairs.

The essence of the problem consists in the fact that the sinking of radioactive wastes is regulated by the London Convention on the Prevention of Pollution of the Sea, which was signed by the USSR in 1972, together with the other developed states. The Convention prohibits in principle the dumping of radioactive wastes with a high level of radiation in the sea. The burial of wastes with low and medium level is allowed by special permission of the secretariat of the International Maritime Organization in the presence aboard ship of its special representative and with the observance of the three main requirements of the International Atomic Energy Agency:

- 1) The place of burial must be located beyond the limits of the continental shelf, internal and outlying seas,
- 2) the depth in the region of the burial must be not less than 4,000 meters,
- 3) sinking is possible only in regions between 50 degrees northern latitude and 50 degrees southern latitude.

The USSR had areas of water corresponding to these demands only in the far-eastern seas. Meanwhile, the Northern Fleet has already for decades been armed with nuclear submarines, atomic icebreakers are based in the northern waters, and the largest testing range for nuclear weapons is located on the island of Novaya Zemlya. Naturally, international observers have long believed: The Arctic Sea has been transformed by the USSR into a gigantic and uncontrolled burial ground for radioactive materials.

The Whole "Nuclear Club" Is Not Without Sin

The world community has constantly raised the requirements for submersion of radioactive waste. At the meetings of the London Convention in 1983 and 1985, resolutions were adopted on a voluntary moratorium on the burial of any types of radioactive waste at sea. In 1992, at the next meeting, this requirement was made in more rigid form. In July 1992, at the Conference of the United Nations on the Environment and Development in Rio de Janeiro, the basic programmatic document "Agenda for the 21st Century" was adopted unanimously, with the participation of Russia—a document which, among other things, proposed the categorical prohibition of the burial of any radioactive materials in the ocean.

Great Britain, France, the United States, and other countries that have nuclear technology, now adhere to these agreements. But in previous years, Great Britain had particularly large volumes of submersions, dumping in the ocean 75.5 percent of all burials of radioactive waste in the world (not counting the USSR and Russia). According to data of the IAEA, from 1946 to 1982 Great Britain carried out 34 burials of solid radioactive waste with a total radioactivity of 949,000 curies. In addition, the dumping of liquid wastes from enterprises of the nuclear industry of Great Britain in the Irish Sea was widely practiced. The scales of the dumpings were so

great that their influence was traced to the Kara Sea and the Barents Sea, and the pollution reached a level of 1 million curies.

Today the IAEA does not have official claims against a single country that possesses nuclear submarines. The USSR, and then Russia, for decades remained the blank spots here. In the report of the Yablokov Commission, about 100 pages in size, it was officially recognized that the USSR carried out the dumping of 18 nuclear reactors in the ocean (moreover, from 6 on submarines the fuel was not unloaded). Sixteen of these reactors lie in the Arctic Sea and in the Kara Sea (among them, all 6 with fuel), 2—in the Pacific Ocean and in the Sea of Japan. Moreover, the "assembly" [sborka] from the atomic icebreaker "Lenin" with partially not unloaded nuclear fuel was dumped in the Kara Sea. Thus, 7 objects with nuclear fuel lie in the Arctic, where the burial of radioactive waste is prohibited. All reactors belong to the group of highly-radioactive wastes whose burial in the ocean is prohibited and, at the moment of their burial, according to most modest estimates, were far in excess of the permissible limit.

Moreover, they also regularly dumped liquid radioactive waste in the Arctic Sea. The summary balance shows that the pollution of the ecosystem of the Barents Sea reaches 319,000 curies, the Kara Sea—2.419 million curies! The radioactivity of the waste buried by the USSR in the far eastern seas is significantly lower and in sum reaches 19,000 curies.

As the result of four accidents on Soviet nuclear submarines in 1968 through 1989, in the World Ocean (the Hawaiian Islands, the Bay of Biscay, the Bermuda Islands, and the Sea of Norway) there turned out to be 5 nuclear power installations. All in all, in the World Ocean there are now 50 such objects.

The Danger Up to Now Has Not Been Calculated

At the present moment, the Yablokov Commission believes, the levels of the radioactive pollution of the seas do not show a dangerous increase in the content of radioactive nuclides. But whether this relative tranquillity will last for long is not known. The metal containers which the Russian Navy uses even now for the dumping of waste are destroyed in the sea environment in 10 years, the concrete containers—in 30 years. The speed of corrosion can increase significantly since many submerged objects consist of multi-metal alloys, which in the salt solution are subjected to electrolytic reactions. Electrolysis makes especially dangerous the submarine "Komsomolets" sunk in 1989, which consists of a steel and titanium alloy. But reality may turn out to be still more dangerous than the theoretical calculations. According to the testimony of eyewitnesses, it was a common practice to shoot up the containers to make them sink more rapidly.

All of this compelled the commission to refrain from definitive conclusions regarding threats to the World Ocean. Many newspapers cite the words of Professor A.

Yablokov: "We cannot precisely determine the level of danger for the World Ocean because for the time being there are no objective data on the penetration of radioactivity into the ecosystem. Perhaps nothing terrible will happen. But it cannot be ruled out that significant doses of radioactivity will pass into the fish that man lives on."

We Did and . . . We Will Continue!

Unfortunately, the good democratic aspirations of the politicians are being reduced to naught by the difficult economic situation of Russia. During 1991-1992, already under president B. Yeltsin, the dumping of radioactive waste from military ships, which violates Russia's obligations, continued. The practical situation is such that this practice will be followed also in the future! In the Northern and the Pacific Ocean fleets, already 30,000 tons of exhausted, heat-releasing assemblies from nuclear submarines have accumulated. In the depositories there are only free spaces for 600 assemblies. . . . The normal operation of military submarines requires the annual transfer of 2,000 assemblies for each one of the fleets. As a result, the nuclear fuel is unloaded today only from 15 percent of the submarines removed from the fighting strength of the Navy.

There is a catastrophic shortage of depositories for radioactive waste in the Navy, and those that are available are in a state of disrepair and do not meet international requirements. Some systems for special disposal [spetsochistka] in the fleet are in principle lacking, and the removal of solid materials to the enterprises of the Ministry of Atomic Energy constantly breaks down. The decision on the installation of depositories for the burial of reactor compartments of submarines, adopted in 1985, has not been implemented. And today, at many bases of the Russian Navy, radioactive materials accumulate directly in open areas.

Such a picture made it possible for the Yablokov Commission to make the distressing prognosis that Russia, for a minimum of 5 years, will still be compelled to submerge in the sea radioactive waste of all types. Only for 1997 do plans call for the introduction of coastal complexes for the processing of liquid waste. In current prices, this program is estimated at R1 billion. Significantly greater expenditures are required by the problem of solid waste handling, and how to approach it has not yet been decided. However, the biggest question along this line is the problem of the burial of damaged reactor compartments, for the solution of which not even preliminary sketches exist today.

If we take into consideration the fact that in Russia, in its present economic situation, ecological programs will hardly receive priority financing, the problem in a number of years threatens to grow to the dimensions of a catastrophe, which will affect every single state. At the present time, "Greenpeace" and the IAEA are trying to nudge the country-members of the "Big Seven" to help Russia in solving the problem of the burial of radioactive waste. But again, given the abundance of directions of

urgent assistance to Russia, precisely this question, with all its importance, will hardly be put immediately on the agenda.

Balakovo AES Tests Fourth Reactor Despite Local Objections

93WN0381C Moscow SEGODNYA in Russian
20 Apr 93 p 7

[Article by Lika Galkina, coordinator of the anti-nuclear campaign, Greenpeace Russia: "Risk: The History of the Balakovo Nuclear Power Plant Abounds in Accidents"]

[Text] The peculiar "nuclear moratorium" on the starting up of new nuclear power plants that lasted for about 3 years has come to an end: The fourth power-generating unit of the Balakovo Nuclear Power Plant, which is located on the shore of the Volga 160 kilometers from Saratov, has been put into testing operation.

The Balakovo Nuclear Power Plant, which received its name from the nearby city, was originally planned as the largest nuclear power plant in the world—it was planned to build 24 power-generating units along the Volga. Already after the erection of the first phase, under the influence of the Chernobyl accident and numerous protests of the population in the region, the number of power-generating units being proposed was reduced to 6. The whole history of the power plant is a chain of dangerous accidents.

On 27 June, 1985, during the testing of the first power-generating unit without the feeding of fuel ("hot running-in"), there occurred a break of the first loop (a steam line, 900 millimeters). Three hundred-degree steam began to enter the facility where people were working. Fifteen people died. In 1988 the steam generators in the first and third power-generating units were withdrawn from operation and replaced (they are stored directly on the territory of the nuclear power plant, since the railway refuses to transport them because of the high radioactivity). In 1989—there was an accident in the first power-generating unit with the leakage of 5 liters of radioactive water into the water cooling pond of the power plant. In 1990 the heat exchanger of the first loop went out of operation. Because of its dimensions, it was not placed in storage and is located in the engineering corridor of the special block. In 1991 three fires occurred at the Balakovo Nuclear Power Plant and three accidents with subsequent ignition. During the night of 3-4 March, 1992, an electric cable caught fire in the electric generator of the third power-generating unit, which was in working order. Written right of entry (!) for fire fighting was issued to firemen 57 minutes after the fire had been reported. The incident was graded as being at the third level on the international scale, which is assessed as a "serious event." The third power-generating unit was for a long time under repair.

The abundance of accidents does not surprise: Numerous dangers were embedded in the very project of the nuclear power plant. Thus, the water cooling pond is

not an artificial reservoir, but a natural arm of the Volga. The dike is not isolated from the Volga, the water circulates practically freely. In the case of a breakdown, the area of the nuclear power plant, which stands higher in terms of the stream of the Samara dam, will be flooded, which will lead to the complete destruction of the power plant. The building of the second power-generating unit was ruined during the installation, after which only its superficial examination was carried out. During the construction of the foundations of the power-generating unit serious engineering violations were allowed: The marble cushions were replaced with a local limestone, which at once started to dissolve in the ground water. The settling of the power-generating units is proceeding faster than the planned settling, it is uneven, and it creates stress in the structure. This pertains especially to the first power-generating unit: On its roof, a "counterweight" was installed—a squared concrete beam, which moves from one side of the roof to the other, in order to secure the strict horizontal position of the chief plane of the reactor and the equipment connected with it. This method is the nuclear power plant administration's own invention—which is rightfully proud of it. According to data of the Saratov Hydrogeological Expedition, the industrial area of the nuclear power plant has been flooded by ground water. The speed of its rise comes to about 1 meter per year. Because of the increased temperature and the increase in the aggressiveness of the ground water, there was a change in the geophysical state of the soil. In connection with this, the director of the power plant in 1991 issued a directive to pump out water from under the nuclear power plant. In the opinion of specialists from the ecological department of the Moscow Institute for Nuclear Power Planning (Atomenergoprojekt), this can lead to the settling of the first power-generating unit into the vacuums forming under the earth, but the director of the nuclear power plant asserts that he is in control of the situation. According to data of the same expedition, in the ground water spread throughout the industrial area, the appearance of such isotopes as cobalt-60 and manganese-54, which directly indicates the beginning of the process of pollution under the influence of the power plant, is being noted. In the water of the cooling pond an increased content of tritium (approximately by a factor of 4 compared to the water of the water reservoir) is being noticed. The processed nuclear fuel is stored on the territory of the power plant. By the beginning of 1992, 235 tonnes of it had accumulated. The fourth power-generating unit does not have a water cooling pond at all. According to the plan of the administration, other power-generating units will be stopped in turn, and the cooling-off of the fourth power-generating unit will be carried out through their ponds. The fourth power-generating unit has a separate story. It was fully completed already in 1990, but the fuel was not loaded because of the absence of an ecological expert examination of the project. At this time, in the summer of 1990, a great campaign against starting up a new reactor at the Balakovo Nuclear Power Plant was developed. The "Greens" and the anarchists of Balakovo, Saratov,

Samara, and many other cities took up position in a tent camp of protest 1 kilometer from the power plant. Soon the local population actually joined them. In this relatively small town, meetings involving many thousands of people were held, and there was talk about a strike. Although the population of Balakovo consists to the extent of one-third of workers of the nuclear power plant, the greater part of it expressed itself against the expansion of the power plant. On 31 July, 1992, the small soviet of the Saratov Oblast Soviet of People's Deputies adopted a decision pertaining to the further construction and operation of the Balakovo Nuclear Power Plant, in which, in particular, the decision of the session of the Balakovo City Soviet on the prohibition of loading the fourth power-generating unit with fuel and putting it into operation was upheld. In addition, a decision was adopted to turn to the RF Supreme Soviet with the request to exclude the second phase of the Balakovo Nuclear Power Plant from the plans for the development of the country's power engineering.

However, in spite of the opinion of the population and the decisions of the local authorities, the Balakovo Nuclear Power Plant was again included in the list of nuclear power stations subject to construction (decree of the government No 1026, dated 28 December 1992). At the end of February 1993 began the loading of fuel into the fourth reactor without notification of the local authorities and the public.

Krasnoyarsk Kray to Boost Fines Against Polluters

93WN0398D Moscow *IZVESTIYA* in Russian
21 Apr 93 p 2

[Item by A. Tarasov: "Fines Increased by Factor of 25"]

[Text] Mindless pollution of the environment by enterprises may soon lead to material losses they will feel.

Plants in the kray annually discharge 600 million cubic meters of "conditionally purified" waste and 200 million cubic meters of raw sewage. Until now the penalty for such barbarism was borne by the industrialists symbolically and, of course, it is more advantageous for them to pay very small fines rather than build or reconstruct purification facilities

Now destruction of nature will be an expensive pleasure. The kray administration prepared a decree which provides for an increase in payments for pollution of the environment by a factor of 25. Monitoring to detect several tens of hazardous substances will be conducted by committees for protection of nature. Exceeding maximum permissible concentrations of any of them will lead to sanctions in the form of fines. At the kray administration it was already calculated that the local budget will be supplemented on that basis by a sum of up to 400 million rubles.

Falling Birthrate Not Caused by Economic Hard Times

934E0600A Moscow *IZVESTIYA* in Russian
22 Apr 93 p 4

[Article by Andrey Demin, expert in the president's administration: "The Birthrate Decline Began 50 Years Ago"]

[Text] It has been stated in the mass media lately that the reform team and almost Yeltsin personally were responsible for the disastrous decrease in the birthrate in Russia.

However, the facts do not bear out such statements. Russia is now experiencing the second decline in the birthrate in past decades which began in 1988, not in 1992 by any means.

First of all, this decline is a direct result of the first decrease in the late 1960's, the consequences of the low birthrate during the war years. In the age group with the highest fertility (ages 20 to 29), which is responsible for over two-thirds of the children born each year, there have been and continue to be fewer women born in the second half of the 1960's and the early 1970's (that is, the daughters of persons born in the war and initial postwar years). The number of women in this age group decreased by 1.7 million, or nearly 15 percent, over the past five-year period.

Another reason for the current birthrate decline, as paradoxical as it may seem, are the measures to assist families with children put into effect beginning in 1982. These measures were adopted in the rising demographic wave, when there was a relative increase in the birthrate anyway, and they led to artificial overstatement of the last peak in the birthrate reached in 1987. The increase in the birthrate during this period was linked mainly to the change in the planned periods for births in families, not to a revision of the number planned. There was a widespread realization of living plans ahead of schedule for a number of generations of women. Now most of these women are of child-bearing age, but they have given birth already not only to their first child, but mainly their second and even third children.

We cannot overstate the importance of the difficulties in shifting to the market and the instability of the economic and political situation. The decline in the living standard is forcing numerous young families to postpone having children until the future. Nevertheless, calculations show that the birthrate of the first children for 19- to 22-year-old women remains practically unchanged. This is understandable—most young families want to have children, after all.

So it would be incorrect because of the complex nature of current demographic conditions to consider it hopeless or to speak about a disaster.

Some increase in the birthrate in Russia can be expected in the second half of the 1990's, when larger generations of girls who are now 14 to 18 years old reach the age of intensive child-bearing.

Tomsk-7: Further on Minatom News Conference
93WN0397A Moscow DELOVOY MIR in Russian
22 Apr 93 p 1

[Article by Miroslav Buzhkevich, DELOVOY MIR columnist: "The Aftermath of an Explosion"]

[Text] When the question turns to nuclear weapons and problems of the consequences of the work of enterprises associated with their production, and especially concerning accidents at them, it always arouses not so much people's interest as their alarm. And this is understandable.

The nuclear arms complex is an important component of the atomic industry of Russia. Its enterprises prepare components and the nuclear munitions themselves. The main characters are about 150,000 workers, engineers, and scientists who are employed at these enterprises, which are concentrated in dozens of closed cities and where a total of about a million persons live. These cities are cut off from the outside world, not just because of the secret nature of the production itself, but also for reasons of safety.

In recent years, life here has been undergoing a noticeable change. Ecological transformations have also broken into this especially defense-oriented, and I would say extremely militarized, branch of the national economy. Conversion and the shift of military production to the output of peaceful products and consumer goods have developed aggressively. Ten programs associated with conversion are now "in circulation" in the Ministry of Atomic Energy. What is involved is the output of the newest medical technology and equipment for the agro-industrial complex, especially clean materials, radioelectronics, etc. Within a year to a year and a half, half of the workers in enterprises of the nuclear arms complex will be working on "civilian" articles.

One of the difficult tasks is dismantling nuclear warheads. Its pace is increasing with each year. Of the 13,000 munitions dismantled in six years, 3,000 occurred in 1992.

The industry, like the entire national economy, is experiencing great difficulty. There are not enough resources for priority programs and wages for qualified specialists, there are fewer scientists than in other industries, and living conditions have worsened in the closed cities, which are now no more attractive than in the open Moscow area city of Maloyaroslavets or the Siberian Tayshet. And here there are also all kinds of industrial shortcomings, like the Tomsk-7 "incident."

Minister of Atomic Energy V. Mikhaylov devoted a large part of his speech to it in a recently held meeting with journalists. He told about where and what happened

directly according to specially prepared sketches and schemes for such an event. I am sorry to say that it seemed to me that the account of the problems of the nuclear arms complex was a peculiar overture to the main theme, for which we were invited to the Ministry of Atomic Energy. The ministry, apparently, very much wanted to "exhaust" the Tomsk-7 subject (incidentally, it is one of the aforementioned closed cities), and once and for all to reassure public opinion.

I will recall what happened.

On 6 April at about 0600 hours at one of the enterprises of the Siberian chemical combine in Tomsk-7, an apparatus with a uranyl solution exploded, and a fire started. As a result, 120 square kilometers of the vicinity was contaminated with radioactive discharges. No one suffered. The people who participated in the elimination of the aftereffects of the accident sustained doses of radiation that did not exceed the norm. A state committee for emergency situations of the Ministry of Atomic Energy visited the scene of the events. And, finally, the IAEA [International Atomic Energy Agency] came. The latter confirmed the objectivity of the conclusions of the Soviet specialists on the reasons and consequences of the accident. There is no direct danger to the lives of the population of Georgiyevka (30 families), which was the only village within the discharge zone.

It seems that there were no grounds for particular alarm. It was bad, of course, that anything should explode in a radiochemical plant. There will be an analysis, the possibility of a repetition of such an incident will be eliminated, and those to blame will be reprimanded. However, certain mass media raised a fuss, and someone even used the term "Siberian Chernobyl." The Russian department of the international organization Greenpeace declared that the cover-up of the true results of the explosion was a cynical disregard for the safety of humanity.

It was at this point that the minister of atomic energy invited journalists in. He explained everything and convinced us that there are no grounds for dramatizing the situation. It is regrettable that this was done in a somewhat clumsy way. The managers of the ministry, for example, blamed technology for everything, but, later, they admitted: Among the reasons for the accident was personnel negligence. The exploded apparatus had been operated for 30 years. But what is the period of its amortization? I was unable to get an exact answer to this question.

But, in general, the discussion was useful both to the audience and to the presidium. The Ministry of Atomic Energy should invite journalists more often. Then it will be difficult to mislead public opinion and to give rise to rumors and disbelief in reports about similar occurrences.

Yablokov on Political Impediments to Nature Protection

93WN0398A Moscow *KULTURA* in Russian
No 16, 24 Apr 93 p 3

[Interview with A. Yablokov, presidential advisor on ecological and public health matters by L. Kononova; place and date not given: "In Rescuing We Are Rescued!"]

[Text] [Konova] Aleksey Vladimirovich, in 1988, during a trip through Sweden, you were asked the question: what would you do if you were granted political power in your country? You replied: "The most important is to return real authority to the soviets, including that in the way nature is used." Now you occupy a high government post, while the soviets have so much more authority than today there is talk about the need to curtail it. Consequently everything dreamt about then has now come true. Does this mean that the situation with the utilization of nature has undergone a cardinal change for the better?

[Yablokov] I detect a slight note of irony in your question to the effect: you were so nearsighted, setting all your hopes on the soviets but your predictions did not come true at all. Talking at that time about real authority of the soviets I had in mind the need for a strong state authority concentrated in a single set of hands governing the utilization of nature. At that time the soviets were the embodiment of such authority. The point is that in those years, as in all of the preceding 70 years, the principal enemy of nature in Russia and all of the Soviet Union was departmentalism. Every department being concerned with the fulfillment of its own plans, absolutely ignored environmental protection issues. If a branch mined coal, then its overriding goal was to raise the production of coal at any price. The fact that due to imperfect technology its mining caused harm to the environment was of no concern to anyone.

Today the situation has changed. Yes, we have still preserved a state and in that state—an atomic industry. The military-industrial complex remains as a powerful monopolist. But on the whole agencies no longer possess such limitless unconditional authority.

A new problem has appeared, however,—parochialism. Each principality, pursuing its immediate material goals, is prepared to sacrifice a stand of trees, a grove, or a small lake located on its territory. Local soviets often appear not as guarantors of the preservation of nature but initiators of its destruction. The cause of such a situation is the same one—lack of a strong state authority capable of organizing inexhaustible use of nature in the interests of the entire society.

[Konova] Pardon me, but is it possible today to speak of an absolute lack of authority when there is the Supreme Council which adopts laws, including laws regulating the use of nature, there is a government which is responsible for economic activity in the country and, finally, there is

the court, and the procurator's office which control the implementation of legislative acts?

[Yablokov] Yes, nominally all of that exists. But let us take a closer look. Are you aware that laws adopted by the Supreme Council of Russia, pertaining to the utilization of nature, contradict each other? The law on underground resources is not fully coordinated with the law on protection of the environment, and the law on protection of the environment sharply contradicts the law on local self-government. The law on local self-government does not fully correspond to the law on kray and oblast soviets, and both of these laws contradict the Federation Treaty. Under these circumstances is it possible to demand an unconditional observance of all laws? The Supreme Council itself created grounds promoting legal nihilism. If it is convenient for you, you can refer to one law, the circumstances change—you appeal using another law. If it is taken into consideration that a cult of law has never existed in our society at all for many years, it is difficult to expect that it will suddenly materialize in a situation with such legal confusion. Therefore the first thing that should be done today is to bring all of these laws into accord with one another. I am convinced that it is necessary to adopt some new laws today as well. For instance, a law on federal natural resources is needed which clearly establishes what types of natural wealth are federal, which ones are regional, and which ones can be managed by the local soviets at their own discretion. A law on ecological safety is needed that would resolve the problems concerning an improvement in the health of the country's population in a fundamentally new manner. Do you know that in 1991 the principal causes of premature death were determined not by poor quality of medical services, but by socioeconomic and ecological factors? By force of habit we are thinking that it is sufficient to invest large sums in the organization of medical services and the health of the people will show a sharp improvement. That is not so! With regard to the prolongation of your and my earthly life it is several times more effective to resolve social and ecological problems to start with.

But we have become distracted. Let us shift to the structures of executive authority. I am convinced that reforms will have an objectively positive effect on the ecological situation in the country. It will be possible to hold someone responsible for violation of rules governing utilization of nature when each enterprise will have an owner: the enterprise will pay out of its own pocket and not out of the state budget. An owner will think three times before ordering dumping of waste into the water and will calculate the amount of all possible fines before felling trees in the forest.

But you understand that the plant owner (a private individual or a labor collective) will behave in that manner only if the threat of having to pay for damages that are done becomes unavoidable and inevitable. Here we come to the weakest link in that triad of authority which you cited—judicial authority. While representative authority in our case is rather poor but does work

after a fashion, and the executive authority works poorly but also functions, whereas our judicial authority is not working at all today. No, at the criminal and street level our judicial authority does make itself felt in a certain way, but in the protection of our right to live in a clean environment unpolluted by hazardous discharges in the air, to consume food products safe for our health is not one of its concerns at all. At present we do not file law suits against an owner of a cement mill who failed to construct purification structures and is poisoning people living in that district. In addition to that we have not formed a sufficient number of efficiently operating tax inspectorates. In Moscow in 1991, proceeding from the damage that was caused the health of the city by industrial enterprises, the ecological fund was to have received four billion rubles. Only 140 million were received! To a great degree that was due to poor work by the tax services.

Thus the idleness of the courts, lack of tax inspectorates, and contradictory legislation, the lack of subordination of local administrations to it—all this gives rise to legal nihilism at the personal level as well. Poaching has today reached unprecedented scales. The living natural resources suffer most with such primitive, wild profit making. Get some bear bile and you immediately earn enough for an automobile. Over 50 percent of the contraband goods produced in the Far East consist of pelts and other parts of bears, tigers, and musk deer. Horrible pilfering of nature is taking place, together with its destruction and it is very difficult to combat that. Sometimes it is easier to halt the implementation of broad-scale ecologically harmful projects (at least they cannot be carried out imperceptibly) than to collar one person setting off on a hunt.

[Konova] The implementation of what ecologically harmful projects did you succeed in stopping? What, in general, do you regard as your greatest achievement?

[Yablokov] The greatest achievement is certainly not mine personally, but our common one which is that a post has appeared in the president's office designated as that of an adviser on ecological matters. The Council on Ecological Policy was created at the presidential level which includes around 20 heads of various ministries and agencies. At sessions of the council we have the possibility of discussing ecological problems in greater detail than at governmental sessions. I relay the council's recommendations to the president. From then on it is up to him whether to accept or reject them, to issue specific instructions to someone or not to issue them. But one thing is certain, the president is constantly aware of the ecological situation in the country and does not perceive these issues as something of secondary or minor importance. The structure of the Council of Ministers now includes a powerful Ministry for Protection of the Environment and Natural Resources. We finally created independent supervisory authorities, those which we could formerly only dream about in the USSR—State

Atomic Supervisory Office, Sanitation and Epidemiologic Supervisory Office, and Technical Mining Supervisory Office. These federal supervisory offices are independent and are subordinated only to the president. That is a highly important point inasmuch as any services for the protection of nature operating within the system of branch ministries are usually ineffective.

Various ecological structures have also been created at all levels of representative and executive authority. In some areas they consist of powerful departments within the councils, in other areas they are departments in the administration. So far the system has not been created in its final form. It is developing, and depending on local conditions, priority is attached to one or another service.

In addition to that one can say that a lot of departments have been created, but if they are idle then what is their purpose? This is a reasonable remark. I still consider that if we want to resolve some problem, we first of all search for people capable of handling its resolution. If there are no such people, then no one may be held responsible, the problem persists.

I believe that if we had not created appropriate structures we would still not be able to have compiled special maps of radioactive contamination of the territory of our country and maps showing air and water pollution. The system of payments for pollution and the use of natural resources would be working less efficiently. At present we have been able to achieve a situation where each enterprise, for instance, clearing forests, makes an appropriate payment needed for reforestation, while that engaged in mining pays for the use of mineral resources.

As far as the halting of ecologically harmful projects is concerned, this problem must be approached considering the pros and cons. Individual sore points exist in each region, in every locality. In addition to that every project involving large-scale development may turn into a dangerous project. In the case of Moscow, for example, construction of the Severnaya TETs [Heat and Power Plant] has turned into such a dangerous project. In the North—it may be the development of the Lomonosov Diamond Field, and in the Altay—construction of the Katun GES [Hydroelectric Power Station].

The burial of particularly hazardous toxic waste is a major problem. We never devoted any attention to the construction of special sites or the creation of conditions for burial of hazardous materials. Even though the entire world, the industrial countries regulate this problem with very rigid legislation. At present we too are developing a draft law on highly hazardous toxic waste.

I would like to talk not about my victories and achievements, however, but about what I have so far been unable to attain. My biggest defeat of recent times, my biggest failure is that we were unable to interdict the concept of power engineering development which was adopted by Gaydar's government and is currently being discussed in the Supreme Council. In line with that concept Chernomyrdin's government at the end of

December last year adopted a decree on the development of atomic electric power stations. That decree is dangerous from the ecological, economic, and social viewpoints. Apparently I and those who share my viewpoint were working on that problem and somewhat exaggerated our own strengths and undervalued the strength of those who are striving to develop our power engineering, atomic industry, using old methods, building large stations without being concerned about conserving energy resources.

[Konova] The anti-ecology forces won?

[Yablokov] In this case, yes.

[Konova] Another question to continue this topic. Do you often get a feeling of personal helplessness and futility in your work? The wrong laws and decrees are adopted, and perhaps even some right ones, but they are not observed by anyone anyway. Industry is destroying nature, and man by his very nature is a predator. Everything seems so hopeless.

[Yablokov] You know, there are times when one loses heart and everything appears in the worst light. Of course there are. But one must not succumb to such moods. In the case of ecology the situation is so frightening that we simply do not have the right to be pessimists. It is necessary to act, it is necessary to do everything possible as well as the impossible in order to save nature, man, and his health. Experience of the industrially developed countries convincingly indicates that the development of civilization certainly does not bring about the demise of all living things. On the contrary it creates conditions for more harmony and better protection. Well, such a path is not forbidden to us. It would be naive to expect that all the links of our state power and the legal system will start working smoothly right away. It is good just that such links have been created. Let us not exaggerate the role of predatory motivations and destructive instincts in man. Let us appeal to healthy and good motivations. Let us be wise and not wasteful and the ecological catastrophe will not befall us.

WESTERN REGION

Ukraine: Minister Reviews Status of Chernobyl Zone

93WN0385A Moscow ROSSIYSKAYA GAZETA
in Russian 20 Apr 93 p 7

[Interview with G. Gotovchits, by ROSSIYSKAYA GAZETA correspondent Vitaliy Panov: "Seven Years After Chernobyl"]

[Text] Our correspondent has a conversation with G. A. Gotovchits, minister for affairs dealing with protecting the population against the consequences of the accident at the Chernobyl AES.

[Panov] Georgiy Aleksandrovich, seven years have passed since the accident. What is the situation today at the Chernobyl AES and around it?

[Gotovchits] I shall begin by saying that Ukraine became the administrator of the exclusion zone a year ago. We took onto our balance sheet 197 different organizations that frequently duplicate one another. I feel that we have succeeded in establishing order in their structure. Currently 120 organizations still remain in the exclusion zone—the duplication and departmental self-interestedness have been eliminated. It was necessary to do serious work with personnel, and as of today we have the necessary specialists in the area of radiology, radiometry, construction, etc. In a word, today one can state boldly that the exclusion zone has a good manager. And the situation in that zone is stable. It differs very little from what was frequently reported in the mass media.

[Panov] But, practically speaking, what has been done recently in the 30-kilometer exclusion zone?

[Gotovchits] We have succeeded in completing a number of operations that had been begun in the preceding years. For example, the polter canal and powerful water pumping. The Benev bottomland of the Pripyat River, where the radiation from Strontium-90 is from 12,000 to 16,000 curies, has been completely partitioned off. For this purpose, we have made a 12-kilometer dike that is a rather large and complicated engineering structure. So currently we are calm—high waters will no longer wash Strontium-90 into the Dnepr, and the Dnepr, in turn, will no longer carry it into the Black Sea.

Something that has become very serious work is the registration of radioactive burial grounds. During the past seven years various departments and organizations created more than 800 of them—frequently hastily. Currently we can say with a large amount of confidence that each of them is "breathing." It is specially dangerous if the radiation gets into the ground, so we are doing everything to avoid this. As for the future, a plan for a long-term reservoir of radioactive waste products has already been approved. For us Chernobyl is no longer an accident, but serious work for years and years.

[Panov] But what are the prospects for the Chernobyl AES itself?

[Gotovchits] Of course, the station must be stopped. The Ukrainian government has already made that decision. From the point of view of energy, all the conditions for that exist currently: to replace the Chernobyl AES, units are being introduced at other nuclear power stations in Ukraine. But the Chernobyl zone must become a single scientific test area. For example, at the present time the Ukraine government has announced an international competition to design a plan to convert the fourth unit into an ecologically safe laboratory. Our Ukrainian scientists and specialists from the United States are participating in it especially actively. Definite complications do exist—after all, scientists from Leningrad and Moscow previously worked actively on problems of the

fourth unit. Currently all these concerns are being assumed by the Ukrainian Academy of Sciences. Of course, people have to become informed about the problem.

[Panov] But, in general, what tangible results have there been from the international scientific support, as well as all other kinds of support, of the Chernobyl programs?

[Gotovchits] We have reconcluded many contracts that had been concluded with the international scientific center that arose under the aegis of the USSR. What we are basically interested in today are the programs that are devoted to the migration of radionuclides, and their influence upon products of agriculture, the animal kingdom, and the environment. Unfortunately, for the time being, few real programs are being carried out. Basically it is the scientists from the United States who are showing interest. One feels that many of our foreign partners are worried about what is generally called the political instability. Although here in Ukraine everything is calm. But it is becoming increasingly difficult for Ukraine itself to cope with the Chernobyl disaster.

[Panov] From time to time Kiev has been stirred up by rumors concerning the state of affairs in the Chernobyl AES zone.

[Gotovchits] Especially when forest fires begin in the zone and the radioactive background along their entire front rises sharply. Obviously, the wind is doing its job. An especially large number of these fires occurred during last year's hot summer. They were extinguished with the aid of the MVD [Ministry of Internal Affairs], and the army was also called in. But this year there have already been two such fires. It has become clear that the forest areas in the zone must be taken under constant supervision to avoid the migration of radiation. We have created the Chernobylles Association. Its workers extinguish fires, chop down trees to form fire breaks, repair the fences around the 30-kilometer zone, and monitor the banks of the rivers and lakes. Currently we are studying the question of using the lumber from the forests in the Chernobyl zone. But, speaking simply in human terms, I can take a deep sigh and say how picturesque those places are!

I shall say outright that we are doing everything, but, so far, there is no real order in the zone. We have not been able to close down all vehicular entries or exits from it—there are about a thousand squatters there, including bums. Considerable amounts of money are needed for all these measures, and I myself do not know what I actually have at my disposal as of today, under conditions of runaway prices and inflation. So the stabilization of the economy is also urgently needed to resolve the problem of the Chernobyl zone.

[Panov] Is this the thing that is most alarming?

[Gotovchits] Not only this. People are slowly moving away from the zones that are contaminated by radiation and that are not suitable for habitation. There have been

frequent failures to execute the laws and decrees linked with granting benefits to the persons who eliminated the accident and the people who suffered from its consequences. Many benefits are even being reviewed for purposes of eliminating them, both here in Ukraine and in Belarus. I realize that there are economic difficulties. But here too one observes the stereotypes of human consciousness coming into play: that happened long ago, but now we have other problems. It's a strange thing—the more we learn about the Chernobyl accident, the more we apparently become indifferent to it.

Incidentally, I do not even know how to comment about the fact that, in the course of issuing new identification cards to the persons who eliminated the accident, every tenth person who had previously received considerable benefits according to the law was unable to confirm his participation in any specific operations. Of course, the record-keeping was weak, but apparently there have also been people who decided to profit from a nationwide tragedy. But how many people who suffered severely do not have any identification cards at all! Prior to my appointment as minister, I worked as the first deputy chairman of the Zhitomir Oblast ispolkom. One of my jobs was to resettle people from the radiation zones. For tens of thousands of residents of the picturesque Ukrainian Polesye, people who had close links with their land of lakes and wanted nothing more in life than to live on their own land, that was a real tragedy.

But if one speaks about what is the most troubling situation today, it is the lack of a single scientifically substantiated concept for using and assimilating the Chernobyl zone. Currently we are doing a lot of work to deal with this, but we do not know completely whether we are expending the funds correctly, whether we are working for the future, or whether we are simply patching up the holes. It is also possible that sometimes we are doing what we should not be doing. So, if one speaks about international cooperation, the joint resolution of this problem, I think, will require the cooperation of the appropriate departments in Ukraine, Belarus, and Russia. We are maintaining constant communication. And this could not be otherwise, because this is a disaster that we all share.

Ukraine: Private Firms Contracting To Import German Chemical Waste

93WN0416A Kiev MOLOD UKRAYINY in Ukrainian
23 Apr 93 p 2

[Article by Bohdan Kushnir: "Ukraine Will Be Turned Into a Foreign Dump: That Will Happen if Such Businessmen as Borysov and Yudovych from the Podolia MP Persist in Their Endeavor, and the Customs Borders Remain Transparent"]

[Text] [Boxed item] Volodymyr Doroshko from Kuznetsovsk in Rovno Oblast asks the following question: "Why are harmful materials being shipped onto our territory from Germany in order to satisfy the greed of some

young businessmen who are merely seeking to derive quick profits from this endeavor?" [end box]

Two small-scale private enterprises in Rovno, which do not manufacture any competitive products, unexpectedly went out into the Western marketplace and concluded contracts with German firms. The contents of these contracts remained a commercial secret for quite some time; access to them was limited to a small circle of persons. Just why were foreign businessmen interested in the Rovno firms Podolia and Alliance-West—companies which are little-known even in this oblast?

Without encountering any obstacles or opposition at the truckload checkpoint, my guides and I turned into the warehouse and storage areas. What we saw were rusty drums, barrels, and various odds and ends stretching off into the distance.

"These are products from abroad which arrived here addressed to the private enterprise known as Podolia," I was told by one of our guides.

It was an impressive sight; you will not see anything like it even at a city dump. Flags of various colors were hung here and there. And it was not a good idea to approach too close to the dump itself. Furthermore, the oblast-level sanitation and epidemiology station has not yet reached a conclusion as to what kind of abundance was so unexpectedly sent to us from thousands of kilometers away in Germany.

If we are to believe the two preliminary items of information from M. Sharlay, the chief state sanitation and epidemiology physician for the Rovno region, a firm known as Rimex turned over photographic chemicals, synthetic varnishes, thin glass for lenses, acetone, and other substances which are certainly necessary for industry. This state physician gave the following assurance: The German items would not contaminate or pollute the environment, provided that the packaging is not used for transporting food products.

After looking over the dump, our guide remarked as follows:

"Several barrels are missing; somebody has already grabbed a few."

And that is not surprising: Although these odds and ends of trash were sealed, they have not been buried.

Nor were there any further German surprises when some staffers from the "K" Section of the SBU [Security Service of Ukraine] Administration for Rovno Oblast showed up at this dump. And they annoyingly insisted that Mr. Sharlay pay the closest possible attention to the incoming German loads of freight. The oblast-level Sanitation and Epidemiological Station glanced once more into the barrels and bottles. Some of them were empty, while paint, dye, or varnish could be seen on the bottoms of others. All the chemical substances had expired deadlines for their use. But glittering on the bottoms of three barrels were several kilograms each of mercury, most

likely its waste products which had not been cleaned out. The Sanitation and Epidemiological Station assigned a danger rating of 2-4 to the chemical substances. But the metallic mercury—which had not been declared in any of the documents—was assigned a danger rating of 1. Most of the inspections of the freight loads at the ATP [motor vehicle transportation enterprise] warehouses for the interurban hauls were inadequate and therefore useless.

Neither the customs office, nor the sanitation and epidemiological station, nor the procuracy, nor the staffers of Section "K" of the Rovno Special Services were able to explain the details of this unprecedented story, in which not only the directors of the Podolia MP [small enterprise], but also the state institutions, had had a hand.

In the German city of Wittenberg Valeriy Krutko, and agent of the Kamaztransservis MP, arrived at the Wimpex firm in order to see G. Siebrans concerning items for the Rovno Alliance-West enterprise. He obtained a bill of lading and watched the loading operation. Everything that came to hand was being thrown into the trucks: tires, buckets, old refrigerators—all sorts of odds and ends for dumps. Valeriy K. was surprised to observe that bottles were loaded which were almost empty; sometimes painted barrels were loaded, and even paintbrushes were thrown into the trucks. Parked close alongside was an automobile from Kharkov bearing the license plate KHAKH 06-16. The driver's name was Vasyl. His task was to negotiate with the firm's officials and see to it that the "goods" for Ukraine were loaded. This firm was founded just recently. There are only six persons employed in it—two of whom work on the sidings. There were no production areas: only a small warehouse 20 by 20 meters in size and three small rooms.

Here was such a small German firm—seen by an agent with his own eyes—and Ukrainian businessmen have started vying with each other to conclude contracts with it. Perhaps very soon now similar dumps for foreign waste products will begin to appear in other Ukrainian cities. Judging by the transport operations, these would be in Kiev, Kharkov, and Lvov. The latest transport haul under investigation was completed from Rovno. But it never arrived in Germany. The Poles—at the point where they take over from the Ukrainian customs officers—were not too lazy to look into the truck; they turned the vehicle back toward Rovno, and the freight has disappeared without a trace. This matter is now under investigation by the Special Services. It could be that this foreign trash has found its way to the bottom of one of our small rivers. Such were the instructions received by the agents in the event of something unforeseen occurring.

While Section "K" of the SBU Administration for Rovno Oblast and their colleagues from Kiev are unraveling the foreign knots, we will ask certain other questions. Why is our young state allowing the proprietors of

the Podolia—Yu. Borysov and M. Yudovych—and their supporters in state posts to arbitrarily transform our territories into foreign dumps? And those persons who should be stopping such dangerous freight loads right at the Ukrainian border helplessly shrug their shoulders or refer to incomplete legislation on the matters involved. This is not just a matter of one or two loads—250 tonnes of German trash were hauled into our country, and fantastic sums are being paid for its utilization abroad. Of these 250 tonnes, some 230 tonnes were brought in by Podolia and Alliance-West, which provided for cooperation with the German firms regarding to products immediately rejected by them. We are not going to probe into the matter of how many bribes and to whom they were promised at this juncture; perhaps the investigation will bring such facts to light. When the investigation began, these businessmen suggested that certain persons had closed their eyes to this matter by saying that the trash would be dispatched to Georgia. Is it possible that certain "wise guys" would be found there who would be willing to sell out their own country for hard currency?

All the contracts with the German firms Rimex (Wolfssohn), Hannover Siebrans (Wittenberg), and Wimpex (G. Siebrans) are based on the desire to maximize profits at any cost. Mr. Borysov was not even frightened by such a point as the following in the contract: The parties to this reciprocal agreement shall renounce all claims and any sorts of fines against each other. And why so? The answer to that puzzling question is simple. Almost all the extra profits have gone to the account of the Podolia MP. Rubbish is rubbish, but among the waste products there are also some necessary things—items which can easily be sold under the conditions of our currently almost empty stores.

Let's consider Paragraph 5 of the contract between Podolia and Rimex:

"The Rimex firm shall receive 25 percent of the profits from the sale of its items. An equivalent amount shall be received by Podolia."

But another 50 percent is also slated to remain with Podolia as a reserve fund for creating a joint venture. Borysov and Co. has received 75 percent of the profits. But Rimex is renouncing even its own 25 percent and is requesting that it be transferred to the account of its small-scale enterprise entitled Partner in Kiev.

The German partners have been dispatching the "goods," paying all the expenses, and not receiving a single mark. May we inquire as to why it is convenient for them to do business in this way?

In Germany, particularly in the eastern regions—where Soviet troops used to be stationed in various places—a great many by-products have been accumulated; they need to be used, and billions of marks are being spent for them. Zealous businessmen, knowing the rather wild and primitive laws of Ukrainian entrepreneurship, have hurled themselves into making greedy and considerable profits. At first—as in the case of fishing—they set out a

great deal of bait. In fact, the first few batches of barrels, partially filled with paint, could be used profitably. Later they released the spoiled worms—the harmful chemical substances and contraband mercury. With our present-day chaotic conditions with regard to freight handling, these items could end up in dumps or in rivers.

The Ukrainian borders have proven to be transparent with regard to German rubbish. The customs officers were too lazy to look into the almost empty barrels and did not bother to verify the certificates on their products (there were none). The investigation could reveal the price paid for this laziness on the part of the Ukrainian customs officials. Nor did the Rovno Regional Customs Office—headed by V. Raykovych—properly perform its task with regard to these "strange items": They too permitted the rubbish to pass through their checkpoints. Thus, even an atomic bomb could be concealed in Ukraine, because our borders are—in effect—transparent. And, at first, the oblast-level State Sanitation and Epidemiological Station gave the OK for selling the foreign trash.

Hryhoriy Shokalo, Rovno inter-rayon procurator for environmental protection, kept asking us whether or not we intended to call him a lawyer for the private firm Podolia. The Procuracy is philosophically dissatisfied with the incompleteness of the legislation in this field. The procurator did not know which article had been criminally violated: 230 or 0. There have not yet been any similar precedents in Ukraine, and without them our legal machinery cannot operate. And the procurator thought for a long time about what to do with that damned rubbish so as not to cause an international scandal. Hryhoriy Mykhaylovych praised the German zinc-clad, i.e., galvanized, barrels. Although old, we do not make anything like them; and beggars cannot be choosers. The procurator empathized with the businessmen: The lads did a good thing; they sold some old refrigerators and paint, but now the matter has ended up in trouble; it is a lot of fuss about nothing. And the trash still has to be picked through.

When you listen to this procurator for environmental protection you get the following impression: Perhaps it would be a worthwhile to import more foreign junk into Ukraine because something useful might be found in its midst. And everything about it is legal. There is a contract. It is all the fault of that damned mercury, which was found in three barrels, and which has compelled Procurator Shokalo to institute a criminal case in accordance with Article 70 (Contraband) of the Ukrainian Criminal Code.

The higher authorities in the Rovno State Administration have obviously not seen the German goods. Viktor Kovalenko, the president's deputy representative, was empathetic to the Podolia business in general terms. He had a talk with the procurator and does not see any reason to put a stop to the activity engaged in by Borysov and Yudovych. Let them continue to bring in the German trash, thereby taking advantage of the lapses in

our legislation. The administration will await the results of the investigation and then have its own say in the matter; this information will be handed over to the newspapers.

The businessmen themselves, as they themselves explained in the procuracy, blame everything on the Germans, saying that they did not expect them to be such pigs. This is a convenient stance to take. Can it really be that they—having signed the contract—did not know what would happen? They knew, but they sacrificed not only their own reputation, but the health of millions of people.

M. Sharlay, chief sanitation physician, and M. Bezkorovaynyy, chief of the Environmental Protection Administration, have passed a decree prohibiting the sale of chemical substances, and they have proposed that the German trash be returned to the Rimex firm. To be sure, they took one step backward when they wrote that if it should prove impossible to return these "gifts" to the Germans, they knew a method for rendering them harmless.

Can it be that the Borysovs and Yudovyches will really transform Ukraine into a European dump?

CAUCASUS/CENTRAL ASIA

Armenia: State Minister Details Steps in Armenian AES Renovation

934K1123B Moscow VEK in Russian
23 Apr 93-2 May 93 p 4

[Article by VEK correspondent Gamlet Matevosyan, Yerevan: "Safe Startup of the Armenian AES Still Not Guaranteed"]

[Text] The inhabitants of Armenia heaved a sigh of relief when work was completed to restore the gas pipeline which exploded on 6 April not far from Tbilisi. It seemed that all the "energy torments" were in the past. But the gas in the republic did not increase. The reason—a new accident, this time in the North Caucasus. As a result of a landslide, a 100-meter section of the Mozdok-Vladikavkaz Gas Pipeline lost its support and was left hanging in the air. The supply of gas through this pipeline has been cut off. There remained in operation only 520- and 720-millimeter pipes, whose flow capacity is no more than 12 million cubic meters of gas daily. This is the quantity of gas that goes into Georgia, and a fraction of it (about two million cubic meters) goes to Armenia. Presumably the restoration of the damaged part of the pipeline will take the rest of this month.

Arguments in the republic concerning the opening of the AES [nuclear electric power station] have died down recently. More and more, people are realizing that Armenia today has no other way out of the profound energy crisis.

As the Armenian Republic Ministry of Energy and Fuel has reported, the results of an expert study conducted by the French firm "Framatom" with regard to the condition of the Armenian AES are positive. In the opinion of the French specialists, both AES reactors—of the same generation as reactors which are still in use in Russia, Bulgaria, and Slovakia—have shortcomings from the point of view of safety requirements adopted in the West. But their advantage is that they belong to the "low-sensitivity" type of reactor. Their dynamic behavior is slow in comparison with the RBMK [high-power pressure-tube reactors] of the Chernobyl type. Experts of Framatom consider that work to improve the AES is completely feasible. In particular, from the point of view of seismic stability, no technical obstacles of any kind which would prevent its being put into operation were found. So it is proposed to begin repair work on the AES in the near future.

It is true, as was said by Armenian Minister of State Sepukh Tashchyan, who has been made responsible for the work on the second startup of the Armenian AES, that simply beginning the repair work decided on by the government still does not mean that the decision has been made to start it up. The final decision on this score can only be made after it is established that operating it will be safe. In the words of Tashchyan, it is possible in a number of cases that the level of safety of the units in the station will be increased as a result of the work carried out.

An intergovernmental agreement with Russia is being prepared: "On Resuming the Operation of the Armenian AES." Plans call for concluding agreements with the Kurchatov Institute of Atomic Energy, and the Gidropress and Atomteploenergoprojekt enterprises, which are to be, respectively, the chief scientific supervisor, general designer, and general planner of the Armenian AES. In Tashchyan's opinion, work on the second startup of the station will take 18 months and will require about 40 million dollars. Five billion rubles from the reserve fund of the Armenian Republic government have already been allocated to carry out the initial projects.

Azerbaijan: Ecological Agreement Signed with Turkey

934K1035B Baku BAKINSKIY RABOCHIY in Russian
6 Mar 93 p 2

[Article by T. Leyla: "Solving Ecological Problems"]

[Text] The Turkish Minister of Ecology, Dolandzhan Akyurek, has completed his five-day visit to our republic. Yesterday the Turkish guest's press conference was held at the State Committee for Ecology.

Appearing before journalists, Akyurek told of his meetings with Azerbaijan President Abulfaz Elchibey, Speaker of the Parliament Isa Gambarov, the president of the republic's Academy of Sciences, Eldar Salayev,

and about his trip to Sumgait and his participation in the opening of the international telephone line in Siazan.

As the minister related, the other day a protocol of agreement was signed on cooperation between Turkey's Ministry of Ecology and the State Committee for Ecology of the Azerbaijan Republic. The agreement provides for the protection and development of the natural wealth of both states. According to Akyurek, Azerbaijan's ecological problems are very similar to Turkey's, but in many respects they are a stage Turkey has already gone through. It is essential to expand the people's ecological education, to publish a specialized literature, and to start courses. In this, Turkey can help. Turkish specialists will also take part in measures to save the Caspian, and in constructing an ecologically clean paper mill in Sumgait. In May, Dolandzhan Akyurek will again visit Azerbaijan on his trip to the Turkish-speaking states of the CIS.

As Arif Mansurov, chairman of the State Committee for Natural Resources of the Azerbaijan Republic, noted, the signed protocol will allow the solution of many problems. The solutions will not be easy, but the labor and funds invested in ecology are invested in the future.

Altan Karamanoglu, ambassador of the Turkish Republic to Azerbaijan, participated in the press conference.

Azerbaijan: President Urges Initiative To Protect Caspian

934K1035A Baku BAKINSKIY RABOCHIY in Russian
6 Mar 93 p 1

[Article: "Azerbaijan Must Assume The Initiative To Protect The Caspian"]

[Text] Baku (AzerTadzh). Azerbaijan must assume the initiative for protecting the Caspian, since for our republic, a major state adjoining the Caspian, the problem of protecting this unique reservoir is a very serious one. This was announced on March 4 by Azerbaijan President Abulfaz Elchibey, receiving the Turkish Minister of Environmental Protection Dogandzhan Akyurek in Baku. Ecological problems of the Caspian affect the interests of many countries, noted the president, and the coordination of their efforts can become the basis for solving these problems.

Mr. Akyurek expressed his readiness to assist in the exchange of expertise and specialists in this field between Turkey and Azerbaijan and to render technical aid.

Azerbaijan: Sumgait Mortality Rates, Caspian Pollution at Record Levels

934K0947A Moscow ROSSIYSKAYA GAZETA
in Russian 8 Apr 93 p 7

[Article by Arif Useynov, Baku: "Chernobyl on the Caspian"]

[Text] Perhaps the only children's cemetery in the world of its type is located in Sumgait. It is a terrible picture, every fourth newborn here comes into the world with

incurable pathology, and the infant mortality rate index is 20-25 percent higher than the average for the republic—statistics close to Chernobyl.

The "great chemistry" of Sumgait also mows down adults, and reliably holds all world records for the diseases of cancer and tuberculosis. They call the industrial center on the Caspian the "death zone."

Hopelessness and despair compelled the associates of the State Committee for Ecology and Use of the Natural Environment to publish a statement on the ecological catastrophe in Sumgait. The arguments are staggering: for two decades, the industrial enterprises of the Sumgait water area of the Caspian have discharged 20 million tonnes of petroleum products, phenol, acids, heavy metals and mercury compounds into the sea. The city and the lungs of its inhabitants are steeped in the gas and ashes of chemical compounds. According to the data of ecologists, there are 1,200 tonnes of harmful substances for every square kilometer—also a world record!

It will be "bettered": the environmental habitat, deteriorating every hour, presents a serious threat to the genetic fund of every living thing around it.

BALTIC STATES

Soviet Occupation's Impact on Environment Viewed

93WN0388A Bonn DIE WELT in German
16 Apr 93 p 9

[Article by Susanne Hoell: "Environment in the Baltics Suffers From Pollution of Ex-USSR"]

[Text] At the former estate of Estonian freedom fighter General Laidoner, just outside the Tallinn city limits, the past is actually tangible. When Russian soldiers as the last inhabitants left the formerly aristocratic house in 1992, they left their filth behind. In the courtyard there are old barrels full of black, oily goop. Rusted generators lie next to banged-up file cabinets, old tires, and other scrap.

In Estonia, just as in Lithuania and Latvia, the Russian soldiers are leaving behind old pollution which the young, poor Baltic republics must deal with. Removing old file cabinets presents no problem for the Balts, of course, but the contaminated soil and ground, saturated with unexploded ordnance of all kinds which the former Soviet troops are leaving behind, is a problem.

In Latvia, where the former USSR had established gigantic fuel depots, it is estimated by experts that many of the Soviet Army's properties spread over a total of 100,000 hectares are polluted down to the ground water with oil. "Old missile silos are filling with water, and we don't know what's in it," an employee of the Latvian environmental institute in Riga describes the situation in the country.

The Estonians have worse fears. The Russian Navy base, Paldiski, located west of Tallinn where until recently crews from nuclear submarines were being trained on experimental reactors, could be contaminated with radioactive materials, Environment Minister Andres Tarand worries. Experts from abroad have so far not been allowed to test the facility, which continues to be monitored by Russian soldiers, nor the chemical factory Silmet once belonging to the former Soviet military industrial complex in Sillamae in the northeast of the country, where uranium dioxide was produced. The English-speaking newspaper *BALTIC OBSERVER* describes the facility as "a monster"; in the meantime it has been converted to less risky productions, to be sure.

Air and water pollution as well as unsafe nuclear plants are often the result of the economic conditions during the USSR period. Under Soviet dominance the three Baltic states were integrated into Moscow's centralized planned economy. In the 1970s the Kremlin thus had the largest nuclear power plant of the same type as the catastrophic reactor in Chernobyl built in Lithuania. The reactor at Ignalina, located approximately 100 kilometers northeast of the capital of Vilnius, with its two 1,500-megawatt blocks, has a poor reputation. There are always new mishaps. In the opinion of environmental protectionists the facility should be immediately and completely shut down. But Lithuania, where the nuclear power plant was once regarded as a symbol of the hated Soviet rulers, does not think it can afford to. The reason is that the country does not have any energy reserves of its own, but, thanks to Ignalina, Lithuania became an exporter of energy. It sells its nuclear power for hard currency and uses it to pay for the now more expensive oil from Russia and for other necessary imports.

Swedish experts are now trying to improve the safety precautions at Ignalina. The Scandinavians are also helping in Estonia, which is relegated to burning oil shale for its own energy supply—a method which is as inefficient as it is polluting. Unfiltered sulfur dioxide escapes from two oil shale thermal power plants in the northeast of the country and is causing "catastrophic conditions" there, as certified by experts.

Lithuania: German Environment Minister Visits Ignalina, Discusses Safety Aid

*LD1604113193 Hamburg DPA in German 0906 GMT
16 Apr 93*

[Text] Vilnius (DPA)—Environment Minister Klaus Toepfer has called for international action to improve safety standards at the Lithuanian nuclear power station at Ignalina, which recently became a talking point due to further technical defects. Toepfer, who visited the power station yesterday, told German journalists in Vilnius today that he would be a charlatan if he were to say anything about the safety standards of the nuclear power station on the basis of

that visit. A thorough investigation and analysis, as currently undertaken by an IAEA [International Atomic Energy Agency] commission, is needed for this.

In a talk prior to visiting the actual reactor, Viktor Shevaldin, director general of the nuclear power station, handed Toepfer a letter with a lengthy list of requests. Toepfer said later that they concerned both individual improvements such as the provision of paint that meets a certain safety standard, as well as leak detectors, which are not present in the Lithuanian plant, and especially improved storage for spent fuel elements. Shevaldin said the fuel storage pools in which fuel elements had been stored until now were almost full so other storage possibilities had to be examined. He said an agreement is to be concluded with a Swedish firm in the summer that will make available containers for so-called dry storage.

Toepfer, who earlier visited the two Baltic states of Estonia and Latvia, said the focus of his talks in Lithuania had been the safety standards of this nuclear power station, which is an improved Chernobyl type, and which in his view needs more improvements in order to remain in existence for a certain period. The Lithuanian side made it clear that apart from using Ignalina for its own electricity supplies, 40 percent of the capacity is used for electricity exports, particularly to supply electricity to the Russian region of Kaliningrad.

German-Lithuanian environmental agreement signed

Germany and Lithuania want to work more closely together in the future in environmental protection. A relevant agreement was signed today by Environment Minister Klaus Toepfer and his Lithuanian counterpart Evalda Vebrä in Vilnius. They are to cooperate in the technical and legal sphere in the future. Bonn will also help with the technical maintenance of the Lithuanian nuclear power station at Ignalina.

Latvia: New Law on Toxic Waste Takes Effect 28 Apr

*WS2704114293 Tallinn BNS in English 0908 GMT
27 Apr 93*

[Text] Riga, Apr 26, BNS—A law on the treatment of toxic waste in Latvia goes into effect April 28, Pavils Raudonis, a spokesman for the Latvian Environmental Protection Committee, told BNS Monday.

The first two paragraphs forbid imports of toxic waste to Latvia and deals on toxic waste on the Latvian territory.

However, the law does not ban the transit of toxic waste through Latvia.

The third paragraph goes into force Oct. 1, 1993, since it still has to be improved, Raudonis said.

The Environmental Protection Committee will set up an inspection program to monitor actions with noxious substances.

The government will also draft state orders for transports of toxic chemicals, Raudonis said.

REGIONAL AFFAIRS

Nuclear Storage Ship Moves Close to Norway Coast

*93EN0414A Kirkenes SOR-VARANGER AVIS
in Norwegian 4 Mar 93 p 11*

[Article by Stein Snee: "Nuclear Storage Ship Moves Closer to Norway"—first paragraph is SOR-VARANGER AVIS introduction]

[Text] The nuclear ship Lepse will move from Murmansk to the Litza Fjord, just 31 miles from Sor-Varanger. Highly radioactive waste with a total radiation of 1 million curies is stored on board the Lepse. Only 1.2 million curies was emitted from the Chernobyl plant. The reason for the move is the fact that the icebreaker fleet no longer can send its fuel rods for reprocessing in the Urals. This has precipitated an acute storage problem that will soon also afflict the northern fleet.

The Lepse is owned and run by the nuclear fleet, and as far back as September the company signed an agreement with the northern fleet to move the Lepse. The boat is currently moored in Murmansk, and on board there are several hundred highly radioactive fuel rods. The administrative director in Murmansk, Yevgeni Komarov, confirmed to the newspaper SOVIETSKII MURMAN that there is an agreement to move it.

93 Miles Closer

There are a number of reasons that the Lepse must be moved. One is that the entire boat is radioactive. On board are a number of crushed rods lying "loose" in the hold. The hold is encapsulated in concrete and the boat is very heavy. It is so heavy that it could sink. And if it sinks, there is a danger, Norwegian nuclear authorities believe, that a chain reaction could be set off in the nuclear waste.

At first, it was hoped to move the boat to Novaya Zemlya, but the ship was regarded as so unseaworthy that such a journey might be too dangerous. At that point, the Litza alternative came under consideration. The northern fleet's large submarine base is located at Litza, and spent fuel rods from the submarines are already stored here. Litza lies just 31 miles from Sor-Varanger. Murmansk is 68.2 miles away.

Taken Out of Water

Thomas Nilsen of Bellona said that it would not solve any problems to move the Lepse. Instead, steps should be taken to better secure the ship. It should be taken out of the water, Nilsen said. As long as it is in the water a danger exists, regardless of where it is berthed. Nilsen was also skeptical of moving the boat into a heavily guarded military area. "It must be an absolute condition that nuclear repositories on the Kola peninsula are under civilian control with possibility of inspection," said Nilsen.

Nilsen has recently written a report on the condition of the nuclear-powered icebreakers in Murmansk. The report states that the whole fleet is facing an acute storage problem. This is due to the fact the nuclear fleet can no longer send its used fuel rods to Majak in the Urals for reprocessing. Formerly, the rods were stored locally for only three years before being sent to the Urals.

Permanent Ships

Today there is a large surplus of nuclear fuel in Russia, said Nilsen. Because of this, Majak has ceased all reprocessing. Consequently, it has also stopped accepting used rods, and the nuclear fleet can no longer get rid of its nuclear waste. This means that boats intended only for temporary storage are being used for permanent storage. The danger of accidents is thus increased.

The nuclear fleet presently has seven nuclear-powered icebreakers and a container ship. Most were built after 1985. It takes three to four years before the rods need to be replaced. In other words, waste stores first began to mount up after 1988, and since then, close to 12,000 fuel rods have been replaced. The fact that these rods cannot be disposed of has led to the nuclear fleet taking two of its icebreakers out of operation. It has not been possible to replace fuel rods because there is no place to store them.

Northern Fleet Affected

"Everything indicates that the northern fleet will soon have the same problems," Nilsen said. "We know that Majak has already ceased to accept rods from certain types of submarines. Soon the rest will follow. And then, the really big problems will arise. Because while the nuclear fleet regularly replaces fuel rods in 13 reactors, the northern fleet must do it for 100 reactors."

"It is therefore urgent to construct a secure land-based repository for nuclear waste on the Kola peninsula," said Nilsen. "But it could take as much as 10 years to build such a repository, so we must be prepared to live with the threat for many years to come."

Passive Authorities

Norwegian authorities are too passive when it comes to storage problems on the Kola peninsula, Nilsen believes. They seem content to record what is happening, and show little interest in helping to find a solution.

"Norway needs to approach Russia and offer technical assistance in solving the nuclear waste problem," said Nilsen. "An estimate should also be made as to whether Norway can pay for a portion of what a repository would cost. But that should not lead to promising money in advance. The Russians must first lay all the cards on the table and give us a reasonable overview of the situation," said Nilsen. "After that, aid might conceivably be offered. For example, on a par with what Norway has promised for a nickel processing plant—300 million kroner."

Dangerous Neighborhood

The Litza fjord is situated at the point where the river Zapadnaya Litza runs into the sea. It is 31 miles from Sor-Varanger. During the war, countless bloody battles were fought here on the so-called Litza front. The area is strewn with war memorials.

Today Litza is known for other reasons. The main base of Russia's gigantic Typhoon submarines is found here. The length of two soccer fields, these are the world's largest nuclear-powered submarines. Furthermore, they are fully stocked with nuclear warheads. The Typhoon was an important factor in the balance of terror, and the submarines were most of the time out to sea. In today's more pacific world, they are berthed much more often than before—at Litza.

On the west side of the fjord there is a repository for nuclear waste. Customarily low and medium radioactive waste is stored here. But just before Christmas it was learned that the northern fleet was also storing highly radioactive fuel rods from submarines in that location. That makes Litza one of the most potentially dangerous nuclear storage facilities in the whole of northwest Russia. When, in addition to this, the Lepse is moved here, the impression has to be that one of Sor-Varanger's closest "neighboring settlements" is also one of the world's most dangerous places.

Letter to the Storting

The call to summon Russia before the international court in The Hague could end up in the Storting. In an open letter to the four Storting representatives from Finnmark, "Stop the Death Clouds" has asked them to bring the matter before the Storting. "The government has acted evasively and cowardly," the letter stated. "Therefore, we are asking our local representatives to use their influence to develop a new Norwegian strategy."

An international press barrage against the Russians is a key factor in this. For example, it could be achieved through a summons before The Hague court. "Stop the Death Clouds" feels that Russia should be charged with blatant environmental terrorism. "Agreements are broken, trade is driven from some areas, and the nuclear threat hangs over us all like a psychic terror," the letter said.

"Stop the Death Clouds" wrote further that it was not willing to put up with further delays in what is Norway's most important environmental issue. The organization is urging the four Storting representatives in Finnmark to use their contacts in the capital to inform the government that the population of Finnmark is very upset with the way Gro, Torvald, and Torbjorn are handling the matter.

EC Contributes to East European Nuclear Safety

93WS0338C Paris AFP SCIENCES in French
11 Mar 93 p 25

[Article: "European Commission Pays 20 Million ECUs Into G-7 Fund for East European Nuclear Safety"]

[Text] Brussels—An EEC spokesperson indicated on 10 March that the EEC has paid ECU20 million (\$23.2 million) into the multilateral account created by the Group of Seven (G-7) to take immediate steps toward improving nuclear safety in Eastern Europe and in the former USSR.

By the end of 1993, the Community will have laid out ECU330 million (\$400 million) of the \$700 million in credits that G-7 decided to allocate over the next three years, during its Munich meeting in July 1992, for the improvement of nuclear safety in the former USSR and in Eastern Europe.

The account is earmarked to finance work on the reactors that present the highest risks, but it will become operational only if it attains a total of ECU60 million with contributions by other donors. It will be managed by the BERD [European Bank for Reconstruction and Development]. France and Germany have already made known their intention to contribute to it.

Pursuant to the 1992 decision by Russian and Ukrainian authorities to accept on-site assistance with respect to nuclear safety, Commission experts will go to five or six sites, between now and summer, to participate in the training of technicians, and to inspect and monitor installations.

FINLAND

Study: Harmful Discharges Into Environment Reduced

93WN0377F Helsinki HELSINGIN SANOMAT
in Finnish 29 Mar 93 p 5

[Article by Jukka Perttu: "Discharges by Biggest Polluters Reduced; Pollution Reduced by a Third"]

[Text] Discharges of pollutants by industry, local communities, and energy production plants were reduced by over a third between 1988 and 1991. The data appear in a recent Water and Environment Board study.

Discharges were reduced during the period covered by the study including periods of both economic growth and decline.

Discharges into the air, which threaten waters and forests with acidification, have clearly been reduced. Particularly plants that spew sulphur dioxide into the air have reduced their pollutant volumes. According to the Water and Environment Board, however, they are still spewing much too much sulphur into the air.

According to the study, most Finnish lakes could be protected from acidification just by reducing the precipitation of sulphur. In some cases, however, that would not be enough; nitrogen precipitation would also have to be reduced.

Nitrogen Discharges a Difficult Problem

A solution has not yet been found to the problem of getting nitrogen oxide discharges under control. The nitrogen discharges of the plants included in the study increased rather than decreasing during the period from 1988 to 1991. The study did not include traffic, which is the biggest producer of nitrogen oxides. However, the use of catalytic converters is reducing nitrogen discharges from cars.

Industry has reduced its wastewater discharges by about a third. Local communities, on the other hand, have achieved a reduction of only 5 percent. This is largely due to the fact that fairly effective elimination of phosphorus was instituted before, but they have not yet set about effectively getting rid of the nitrogen. On the contrary, pollution of the waterways increased during the period covered by the study.

Farming, however, is a considerably bigger nutrient polluter of the waters than industry or the communities. Energy production and forest and metal industry companies are among Finland's biggest polluters. They are often big job providers and important producers of export revenue.

According to the Water and Environment Board, however, there are so many of certain pollutants that nature's ability to tolerate them is exceeded. Nitrogen discharges, which eutrophy and acidify, are cause for particular concern.

Minister Comments on Nordic Environment Study

93WN0377A Helsinki HELSINGIN SANOMAT
in Finnish 2 Apr 93 p D 2

[Article by Helena Kinnunen: "Nordic Environment Report: Direct Exploitation of Natural Environment Is Worse Threat Than Pollutants"]

[Text] The greatest threat to the environment in the Nordic countries is people's own activities: farming and forestry, fishing, the construction of hydroelectric power plants, land settlement, and other direct intervention in the natural environment. Compared with these, the impact of pollutants is less important.

This conclusion is presented in a report made jointly by the Nordic countries, which was made public in all of the Nordic capitals on Thursday [1 April].

Intensive forestry has changed the nature of our forests and reduced the number of species in them, especially in Finland and Sweden. In comparison with the other

Nordic countries, Finland is overwhelmingly enthusiastic about draining its marshland, which is changing the natural environment.

The state of the environment is in many respects better in the Nordic countries than it is elsewhere in Europe, the report assures us.

If the Nordic countries were to be ranked, Denmark would come last. The pollution of its environment is noticeably greater than elsewhere in the Nordic countries. The reason for this is dense settlement. In Denmark an average 119 people live in a square kilometer; elsewhere in the Nordic countries the figure is less than 20.

Industrial Discharges Reduced

Industrial discharges have been reduced in the Nordic countries, despite the fact that only a few decades ago they were as irresponsibly produced as discharges are in eastern Europe at the present time. The Nordic countries' air pollution problems originate in large part in pollutants carried by the wind from elsewhere in Europe far off.

At least as far as the air in the cities is concerned, however, people's own activities are a decisive factor. According to the report, the quality of the air, especially in the large cities, is not anywhere near satisfactory. Increased automobile traffic has canceled out what is achieved by reducing other discharges.

Norway's cities are plagued with the worst air pollution problems because the mountains trap the pollutants as in a bowl.

In Denmark many water catchments in Jylland are becoming unusable because fertilizers are continuously raising the nitrate/nitrogen levels of ground water.

Record Mercury Levels in Sweden

A substantial number of Sweden's and Finland's lake fish would be classified as unfit for consumption if mercury limits as low as in many other countries were applied to these fish, they assert in the report. A large part of the mercury comes from cellulose mills and the chemical industry.

The problem is worst in Sweden. The Swedish limit on mercury, 1 milligram per kilogram, is exceeded in the fish of 10,000 small lakes in Sweden.

In Finland mercury levels in pike and other predatory fish exceed the limit in about 3,000 small lakes.

On the occasion of the public announcement of the report in Helsinki, Environment Minister Sirpa Pietikainen (Conservative) said that the Nordic countries now want to show that their environment policy is moving in the direction of the EC's. She also thinks that the report will serve that purpose very well.

The environment report was compiled by a Nordic Council of Ministers committee. Intelligible to everyone, the text was written by a Swede, Claes Bernes.

Finns Seen Especially Vulnerable To Thinning Ozone Layer

*93WN0377C Helsinki HELSINGIN SANOMAT
in Finnish 6 Apr 93 p 9*

[Article by Helena Kinnunen: "Thinning of Ozone Layer Has Increased Ultraviolet Radiation; Average Person Who Suns Himself Turns Red 18 Minutes Faster"]

[Text] The ozone layer, which protects against the burning radiation of the sun, thinned out to an exceptionally great extent in February-March of this year and last year. There was 25 percent less ozone over Finland in February than there normally is and a year ago there was 20 percent less than usual.

The thinning of the ozone layer of the upper atmosphere has increased the amount of burning ultraviolet radiation by from 10 to 15 percent in the spring and from 5 to 10 percent in the summer as compared with the amounts recorded in the mid-1970's at Finland's latitudes, special investigator Petteri Taalas of the Meteorological Institute said.

The ozone layer is at present already getting stronger, he said. The value measured above in Helsinki was 20 percent below normal on Sunday night.

On Monday [5 April] the Meteorological Institute explained at a news conference it gave in Helsinki how the thinning of the ozone layer of the upper atmosphere affects a person who exposes himself to the sun:

The 25-percent loss of ozone in February-March of this spring causes a person's skin to turn red when exposed to two hours of sunshine. If the ozone layer had remained unchanged, the skin would have tolerated the sun for 20 minutes longer.

Using an international standard of measurement, the Meteorological Institute calculated skin reddening for an ordinary white person's—or "Caucasian's"—skin. Perhaps some 60 percent of all Finns could be counted as having this skin type, chief physician Harri Vertio of the Cancer Association estimated.

The record ozone losses measured in February-March are not, however, very significant from the standpoint of people's health, the Meteorological Institute experts say. The thickness of the ozone layer naturally varies according to the time of year. Since the layer is thicker in the early part of the year than it is in summer, thinning does not result in very much of an increase in burning ultraviolet radiation.

Taalas explained that people get roughly the same amount of radiation in early winter in the snow of Lapland and snowless southern Finland. In the south the sun shines at a higher angle, which is why there is more

ultraviolet radiation. In the north the snow may double the effect of ultraviolet radiation.

These days the skin reddens in as quickly as 47 minutes in early April. If the ozone layer were as thick as it used to be, a person sunning himself could bask in the sun for 18 minutes longer without turning red.

In July the skin turns red in 15 minutes. If the ozone layer were the same as it used to be, it would take six minutes more for it to turn red.

Ozone readings have remained unchanged at Mediterranean vacation spots. The surface of the skin would redden there in 11 minutes.

Finns Have Sensitive Skin

A fourth of all Finns are more sensitive to the sun's burning ultraviolet rays. "Armi Kuusela is an example of this skin type," chief physician Harri Vertio said. Fair-skinned redheads who readily acquire freckles could also stay out of the most intense heat of midday.

Vertio recommends wearing a shirt and a hat, especially for children. A sun cream also helps, he says. But it should be applied more often than just once in the morning. He recommends that the protective factor of the sun cream be at least eight at sea.

Doubling the amount of ultraviolet radiation increases the risk of basal cell cancer and spiny cell cancer by three to four times. In Finland 4,000 new cases of basal cell cancer a year are verified and 500 cases of spiny cell cancer. Both cancers are benign.

Finland's most rapidly increasing cancer is melanoma. About 600 people a year contract it. Burning the skin adds to the risk of melanoma. The treatment of melanoma has improved over the past few years such that from 70 to 80 percent of those who have it can be cured. Surgery is the treatment.

Vertio said that the skin cancers that people have now are not yet attributable to the ozone loss. Not even in Australia has it yet been reliably demonstrated that the sharp increase in skin cancer is due to the ozone hole over Antarctica. It takes from 10 to 30 years for the cancer to develop.

The current cases of cancer date back to exposures that occurred in the 1960's and 1970's.

During the week beginning on 10 May there will be free consultations for people suspected of having skin cancer at Finnish cancer organization clinics in various parts of the country. Basal cell cancer appears on the face and the same applies to spiny cell cancer in most cases. Melanoma looks like an ordinary mole. If the mole changes color or the shape of its edges, or itches, a visit to the doctor is in order.

Highway Agency Test To Reduce Salt Use Seen Success

*93WN0377D Helsinki HELSINGIN SANOMAT
in Finnish 6 Apr 93 p 5*

[Article by Jaakko Julkunen: "Test With Unsalted Roads Goes Smoothly Without Traffic Deaths"]

[Text] Kuopio—The abandonment of salting and reduction of salt on the highways of Kuopio Province has not so far resulted in a single fatal collision, according to the province traffic accident investigation board. The board especially praised the road district for providing excellent public information on the test. In the board's opinion, drivers improved their driving habits on the test roads, avoided unnecessary passing, extended the distance between their and other vehicles, and better anticipated dangerous spots in traffic. The Kuopio Road District is going to continue its unsalted roads test next winter. The Highway Department will make good use of the results later throughout the whole country.

Groundwater Pollution Traced Mainly to Farming

*93WN0377B Helsinki HELSINGIN SANOMAT
in Finnish 10 Apr 93 p 7*

[Article by Jukka Perttu: "Groundwater Is at High Level in Central and Northern Finland; Nitrate Levels Produced by Nitrogen Precipitation Are Rising in Groundwater; Increase in Sulphates From Sulphur Discharges Has Taken Downward Turn in Some Places"]

[Text] Groundwater levels are higher than usual throughout nearly the whole country. In March groundwater in central and northern Finland was from 10 to 50 centimeters higher than the long-term average. On the other hand, in southernmost Finland the readings were nearly normal.

The abundant groundwater reserves come from last fall's rains.

Since the water content of the snow in northern Finland is very high, we may expect that meltwater will quickly replenish water reserves as the spring progresses.

On the other hand, the snow melted early in southernmost Finland and on the west coast. In those areas groundwater reserves will probably remain under the usual spring replenishment levels. So, geohydrologist Jouko Soveri of the Water and Environment Board estimates that the groundwater in the southern parts of the country will sink to lower than its 10 to 30-cm long-term average level in the spring and summer.

Groundwater Quality Is Changing

The precipitation of sulphur and nitrogen, which acidifies the soil, is gradually changing the quality of the groundwater. In Finland the effect has been most noticeable in the southern and southeastern parts of the country.

Nitrogen precipitation has been raising groundwater nitrate levels for years. It is difficult to alter this development because it is very costly to reduce discharges of nitrogen oxides that are concentrated at high levels. The increase in nitrate levels brought on by nitrogen precipitation is, however, still far from the amount that causes substantial damage to people's health.

The limit for nitrates set by the Medical Board is 25 mg per liter. The limit set by the EC directive is 50 mg per liter—if this were the Finnish level, it would be very difficult to get drinking water in some places.

Leaches Metals

Nitrates are particularly injurious to nursing infants. They are transformed into nitrates in the organs of the body and affect the hemoglobin of the blood in such a way that the blood does not get enough oxygen.

The nitrosamines formed from nitrates have caused cancer of the stomach in test animals. In Finland nitrate levels may be dangerously concentrated primarily in private wells that have not been inspected. Even, say, a nearby barn can increase the nitrates in the well. There are 350,000 households in Finland that depend on their own wells for water.

"An overly large precipitation of sulphur, on the other hand, appears as a rise in groundwater sulphate levels. The rise in levels has, however, come to a halt in some places. It has been noted at some groundwater stations that the sulphate level has completely dropped," Jouko Soveri said.

The amount of sulphur precipitation has declined over the past few years since Finland has very substantially reduced the number of sulphur discharges and this trend will probably also continue during the next few years.

The acidification of the soil leaches lead, zinc, cadmium, manganese, and aluminum, among others, out of the soil and into the groundwater.

Agriculture Is Worst Polluter

However, the greatest danger of pollution stems from agriculture. Large groundwater reserves and agricultural production are not, to be sure, usually located in the same area.

The use of fertilizers and pesticides has increased over the decades.

Soveri estimates that about 110 kilograms per hectare of nitrogen fertilizer are used in areas under cultivation. Furthermore, 10 kg per hectare gets into the soil through cow manure and from 5 to 20 kg per hectare from the air.

Agency Studies Fertilizers' Effect on Waters

93WN0377E Helsinki HELSINGIN SANOMAT
in Finnish 30 Apr 93 p 8

[Article by Riitta Vainio: "Agricultural Water Targets in Most Urgent Need of Protection Specified; Reduction of Fertilizers Would Afford Economical Environmental Protection of Fields"]

[Text] The Water and Environment Board (VYH) has specified the agricultural water targets most urgently in need of protection by water system area. All told, it is estimated that urgent measures are needed in over 200 areas.

In keeping with the distribution of the water and environment districts, there are from five to 40 targets in the different provinces. The necessary measures were determined according to whether the area in question is a groundwater area, a special protection waterway, or an active water protection area.

In order to implement the environmental protection program, detailed protection plans for farms have to be drawn up first. So far, environmental protection plans for about 15,000 farms have already been drawn up. In the opinion of VYH representatives, protection has been implemented best in Southern Pohjanmaa, while Hame farmers have been the slowest to take an interest in it.

Waterways Can Be Polluted With Fertilizers

Half of the entire cultivated surface area throughout the whole country have been designated as areas requiring urgent action.

Treatment plants have to be built and new liquid manure facilities set up, among other things, to implement protection of the waterways.

The overwhelmingly most effective and cheapest way to reduce pollution of the agricultural environment, however, is to cut down on the use of fertilizers.

In some places they still spread the fields with too much fertilizer, which pollutes the waters.

The largest percentage of environmental pollution comes from farming. The law does not impose any limits on overfertilization. Various recommendations have been drafted for leaving riverside fields, which are sensitive areas from the standpoint of the waterways, uncultivated and for protected zones along river banks and shorelines. Less intensive farming also reduces pollution from the fields.

Some of the targets selected for environmental protection measures are places where the quality of the water is still good and an effort is to be made to preserve it. Some of them are already polluted waterway areas which should be treated. The preservation of clean waterways is most often accorded priority.

The goal, according to the original plan, is to carry out the water protection programs between 1993 and 1995. In connection with the programs, there will also be a follow-up program to change the condition of the waterways so that it is better than it was before.

On Monday, chairman and managing director of the Water and Environment Board Kaj Barlund said that he did not think that they would succeed in reducing pollution of the agricultural waterways by the 1995 deadline in view of the present situation, but that doing so would probably continue into at least the first half of the next century.

Barlund would be prepared to compromise on the principle of "the polluter pays" as concerns protection of agricultural waterways and grant more state funds for agricultural water protection at an earlier date.

NORWAY

Ecological Milk Within Two Years

93EN0415A Oslo AFTENPOSTEN in Norwegian
17 Apr 93 p 14

[Article by Tove Fasting: "Milk Will Become Ecological"]

[Text] Ecologically grown vegetables have long been on the market. In a few years we will also have ecological milk.

Ecological milk is a success in both Denmark and Sweden. In Copenhagen, 10 percent of all milk sold is ecological milk. In Stockholm ecological milk has a market share of 1 percent. Demand has been so great that many Swedish dairy farmers must reorganize their production to satisfy the market.

Now the dairy farmers in Nord-Osterdal want to begin the production of ecological milk. Within two years, 24 farmers from Atna in the south to Roros in the north have reorganized to ecological production. Altogether, the production will amount to a million liters of ecological milk. The milk will be on the market in four years.

Not Artificial

"Ecological milk comes from cows that are bred on what is mainly grown on the farm. The feed is not fertilized with artificial fertilizer. The milk is not homogenized, and the fat particles are not finely split." In addition, transportation from the farm to the dairy will not take more than four hours, according to the project leader, Hilde Aanes, in Nord-Osterdal's ecological farm group.

Ecological milk tastes different from the milk we buy today. It is more like the milk that comes right from the cow. This is due, among other things, to the fact that the cream layer on the top is not removed. It is also treated so that it does not clump up.

"In fat percentage, ecological milk lies between whole milk and skim milk. It is possible to produce skim milk ecologically, but we will not do that at first," Aanes said.

Dairy farmers in Nord-Osterdal intend to take over 1 percent of the market in Oslo.

"Ecological milk is a typical large city product," Aanes said.

In the large city, many people want ecological products as a compensation for an environmentally hostile and stressed conduct of life. It is first of all in the large cities that the people are also willing to pay more for environmentally friendly products. The price of a liter of ecological milk will be one to two kroner higher than the usual milk.

Association Derides Government CO₂ Policy

93EN0438Z Oslo AFTENPOSTEN in Norwegian
23 Apr 93 p 2

[Article by Sveinung Berg Bentzrod: "Traffic Threatens CO₂ Goal"]

[Text] "The government has decided to let things ride. It will be a matter of luck if Norway achieves its CO₂ goal," the Nature Conservancy Association said.

Project leader Sveinung Oftedal of the association is not very impressed by the fact that Norway has reduced its emissions of the climate gas CO₂ (carbon dioxide) by 5 percent since 1989.

This year the Storting approved a resolution stating that emissions should not exceed the 1989 level in the year 2000. The report submitted yesterday by the Central Bureau of Statistics (SSB), "Natural Resources and the Environment, 1992," shows that at the moment we are in good shape.

But with the planned increase in North Sea oil activity and the big emphasis on road construction in the new highway plan, the government risks undermining the goal. The long-range plans open up the possibility of a reduction in the CO₂ tax on oil. This along with the possibility of increased emissions as a result of an economic upturn in Norway could make it difficult to meet this goal, according to Oftedal.

Norway discharged approximately 33.5 million tons of CO₂ into the air in the last two years.

"Several cabinet ministers have pointed out that economic growth is not necessarily 'malignant' as far as the environment is concerned. However increased traffic and oil extraction are being stressed. These are the most important areas when it comes to CO₂ emission," said the Nature Conservancy expert. He made his comments on the SSB report from what might be called the center of the issue, standing in the middle of the traffic intersection near Oslo's central station.

Not Giving Up

"The government still wants to meet the CO₂ goal. It is important to adhere to it, although I am aware of the highway plan and the scheduled increase in oil extraction," said Under Secretary Borre Pettersen of the Environmental Affairs Ministry.

"New technology is being established in the North Sea that will provide great environmental benefits, according to the oil companies, especially in old fields. When it comes to traffic, the railway plan sets the stage for a substantial emphasis on mass transit in the Oslo area. As you know 40 percent of the population lives within a one-hour drive from Oslo Fjord. And we must also expect the car fleet to be replaced in the years ahead," Pettersen said.

"The point is that increased activity will not necessarily lead to increased emissions if economic growth becomes a reality," he said.

What It Will Cost

The UN climate panel has recommended that CO₂ emissions generated by people be reduced by 60 percent as soon as possible. Denmark and Germany both have goals calling for a 20-percent reduction in the course of the 1990's.

Recent statements from U.S. President Bill Clinton suggest that he wants to reduce CO₂ emissions to the 1990 level by the year 2000. Against this background the Norwegian goal is trifling, according to the Nature Conservancy Association.

An SSB analysis cited in the environmental report shows that Norway's gross national product (GNP) would be reduced by only 0.5 percent if we decide to cut CO₂ emissions 30 percent by the year 2020.

With a 50 percent reduction the decline in GNP would be between 2 and 2.5 percent. A prerequisite for this prognosis "panning out" is that all of the current energy taxes are put back into the economy in the form of reduced employer taxes and that we rely solely on Norwegian initiatives.

Other figures from the report show that it will be more expensive for Norway to cut emissions than it will be for the United States, for example. Stabilizing the emissions at the 1990 level in the United States with the help of taxes will require a tax of around \$5 per ton of CO₂.

For Norway a similar stabilization would require a tax of around \$45 per ton of CO₂. The SSB has calculated that a stabilization of CO₂ emissions at the 1992 level in the year 2020 would require a tax of around 80 ore per liter of oil compared with 40 ore today.

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